THE

Hunterian Oration

ENTITLED

JOHN HUNTER AS A MAN.

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HUNTER AS A PIONEER.

MR. PRESIDENT, LADIES AND GENTLEMEN,—Brought up, as I have been at St. Bartholomew's Hospital, in the straitest sect of the Hunterian School, I might fairly claim some knowledge of the pioneer in surgery, the anniversary of whose birthday we are assembled to celebrate to-day. Sir William Savory, my revered master, learnt from Sir William Lawrence, and he from John Abernethy, who himself sat at the feet of John Hunter and was ever afterwards his eulogist. But much as I had heard of John Hunter a reperusal of his works has shown me how little I really knew about the originality of the man, of his limitations, or of the handicaps under which he worked. It is on these subjects that I shall speak to you to-day, and my wish to do so is the greater because the principles of surgery which he laid down have fallen somewhat into the background, being overshadowed by advances in chemistry, physics, and physiology, by the advent of bacteriology, and by the work of Lister.

I want you to think first of John Hunter as a pioneer in the philosophy of surgery, not as a skilled operator. Like all pioneers, he lived and worked alone, for none of his contemporaries could think as he thought or see what he saw. Like Vesalius and Harvey, he had to educate a new generation to foster his ideas and expound his thoughts.

Limitations.—The limitations of John Hunter are obvious. He was hampered by a defective education. He had an almost mediæval respect for words as words. He could not express himself clearly either in writing or by word of mouth when he dealt with the more difficult problems of surgery which he knew existed though he was unable to solve them for want of the ancillary sciences. He was a gross teleologist. His metaphors were often strained and sometimes wholly false. He was confessedly ignorant of the work of his surgical colleagues and foreign contemporaries, and, as I shall show presently, he suffered from frequent and severe attacks of illness which would have incapacitated anyone possessed of a less dauntless spirit. But when we have said this we have said all there is to say against him as a man.

Handicaps.—Now consider his handicaps. There was no chemistry in his day, no physics, no acquaintance with minute anatomy, for the microscope was not yet in common use, no knowledge of animal cells, hardly even a theory of fermentation to account for disease, because humoral pathology and the doctrine of climatic conditions still held sway.

Joseph Black discovered "fixed air" or carbon dioxide in 1754; Priestley prepared "dephlogisticated air" in 1774. Three years later Lavoisier called it "respirable air" or "oxygine," and taught the true nature of the interchange of gases in the lungs. Hunter by this time had done much of his work on respiration. The want of a well-calibrated thermometer vitiated many of his experiments on animal heat. He was obliged, therefore, to stumble along and explore the fields of surgical knowledge as best he could, for he was half a century before his time. He would have gotten the true explanation of many of his facts had he been born in 1778 instead of in 1728. With all these limitations and handicaps he often arrived very nearly at the truth, and his writings are full of the most astounding presages of knowledge to come, presages which have been fulfilled for the most part by the advance of science, although some still await their accomplishment.

Animal Heat.

Hunter's methods and the advances he made are nowhere seen to better advantage than in his experiments and observations on animals in regard to their production of heat. Just a century earlier his great predecessor, William Harvey, who equalled him in originality of thought and excelled him in logical exposition, had dealt with the subject of animal heat in the seventy-first essay of his treatise "De Generatione Animalium." John Mayow had solved the problem at Oxford in 1674, but he died young and the "Tractatûs Quinque" fell stillborn from the press. He left no successor; his discoveries had to be made afresh and applied by others more than a hundred years later. Albert Haller, who did so much to advance physiology in general, was not particularly interested in the subject of animal heat, so there had been no material change of thought about it in the century which separated Harvey from Hunter. It is fair, therefore, to compare the two monographs, bearing in mind that Harvey was already well-stricken in years when he wrote on "calidum innatum," whilst Hunter —aged 38—was in the prime of life when he performed his experiments, although they were not elaborated and published until 20 years afterwards.

Harvey is trammelled throughout by his knowledge of history; his treatise is filled with quotations from Aristotle, yet he arrives at the very practical conclusion that the heat of the blood in animals during life is neither fire nor derived from fire as the ancients thought. It is a principle inherent in the blood, but he then loses himself in speculating whether or not the blood is the Soul or Life itself.

Hunter starts in a very different manner. The lapse of 100 years had given him an instrument of precision—the mercury thermometer invented by Fahrenheit in 1720—whilst the work of Black had afforded some insight into the composition of the atmosphere and the interchange of gases. But the science of physics had not advanced sufficiently to enable Hunter to appreciate the relationship of heat to cold. He speaks of animals which "seem to possess a power of generating cold," whilst to him, as in the time of Harvey, heat was still a principle. How new an instrument the thermometer was is shown by a letter to Jenner on July 6th, 1777, in which Hunter says:—

> "The thermometer is very useful when understood. You will observe the scratch upon the glass stalk, perhaps about 2 inches from the globe, which is the freezing point. Put 0 or nought which is upon the ivory scale 2 degrees below the scratch, the 0 becomes the thirtieth degree and the scratch being 2 degrees above it stands at the freezing point; then from that count upwards; or, if the cold is below 30 then put 1 or 2 at the scratch and count down; every No. is 10 degrees. What the devil becomes of your eels in the Winter? but try them in the Summer and see what you can make of them."

Jenner does not seem to have been very fortunate in his management of the thermometer. A few years later Hunter writes chaffingly to him: "You are very sly although you think I cannot see it. You very modestly ask for a thermometer. I will send you one, but take care that those damned clumsy fingers do not break it also." Nevertheless, even with such inadequate instruments Hunter set out to determine experimentally the cause of animal heat not only in different vertebrata and invertebrata, but also in the vegetable kingdom. He came to the conclusion that "animal heat is owing to some decomposition going on in the body in pretty regular progression, though it is not the process of fermentation." He thus gave for the first time the correct answer to a problem which had baffled philosophers from the earliest days. He then adds the very important statement: "I expect the blood has an ultimate standard heat in itself when in health and that nothing can increase that heat but some universal constitutional affection." Ignorance of the functions of the nervous system prevented him

from studying the mechanism of heat regulation in animals, though he distinguished clearly between the homoiothermic and the poikilothermic—the warm- and the cold-blooded—for he says "the expression should rather be animals of a permanent heat in all atmospheres and animals of a heat variable with every atmosphere." A strange perversity led him to spoil his result, for he limits the place of heat production to "some part of the body, perhaps the stomach," and by ill fortune it did not occur to him to measure the fever in disease.

The Causes of Disease.

The shifts to which John Hunter was put to explain the general principles of disease in his ignorance of micro-organisms are both interesting and ingenious. He was in the position which we occupied until lately in regard to tubercle and syphilis and where we still stand about cancer. He knew the clinical facts but could not interpret them, for he had no knowledge of the part played by micro-organisms.

How near he got to the truth is shown by his definition of disease when he says: "The most simple idea I can form of an animal being capable of disease is that every animal is endued with *a power of action* and *a susceptibility of impression*, which *impression* forms a *disposition*, which disposition may produce *action*, which action becomes the immediate *sign* of the disease; all of which will be according to the nature of the impression and of the part impressed." This seems at first sight to be a mere cloud of words hiding nothing. Interpret it by latter-day knowledge and it shows how far Hunter had advanced in surgical pathology. What he calls *the power of action* we now speak of as *the predisposition* to disease or the *diathesis*; the *susceptibility of impression* is *the infective organism*; the *disposition* is the *exciting cause*, and the *action* is the *manifestation of the disease by signs and symptoms*. Take tuberculous arthritis as an example. The tuberculous diathesis (*power of action*) allowed the tubercle bacillus (*the susceptibility of impression*) to settle in the joint in consequence of a sprain (*the disposition*), and the joint then became hot and swollen (*the action*).

He says, indeed: "A true specific disease is one that probably cannot arise but from one cause and which probably always belongs to morbid poisons." He gives as an example "Scrofula, which is one of those diseases that is supposed to be hereditary, but it is only a readiness to fall into the peculiar action when properly irritated that is hereditary, and when such a cause does not exist we find no scrofula."

Surely *nil nisi clavis deest*, the key alone is wanting, and the key was not forged until Pasteur and Lister—the master locksmiths—came to maturity more than 70 years after the death of John Hunter. He was even a little in advance of the earliest Listerian teaching, for he showed by experiment that "air simply has no power to excite inflammation." He returns over and over again to the problem of the causation of disease when he is considering the causes of inflammation. Thus he says: "It is the *cause* producing inflammation which is the disease and not the inflammation itself, for all inflammations that can be called diseases have specific causes." And he is driven at last to confess that "inflammation may arise from a vast variety of causes with which we are at present unacquainted, nay, which we do not even suspect."

THE HUNTERIAN SCHOOL.

If Hunter was born half a century too soon to allow of his genius giving the best results, the span of his life coincided with the time needed to establish a school of scientific surgery in this country. No great surgeons existed in England from the death of Richard Wiseman in 1676 until William Cheselden began to make his reputation by teaching anatomy privately in 1711. The industry of Mr. G. C. Peachey has shown that Hunter was not the first to hold private classes, as a demand had already grown up for more advanced teaching than was provided by the formal lectures at the United Company of Barbers and Surgeons—lectures which had once been of the greatest service to surgery but which in process of time had become obsolete. Cheselden, Nourse, Chovet, Sharp, and Pott had lectured to large classes before Hunter, but they dealt only with their own experience and with surgery in its clinical aspects. It was left to John Hunter to invent surgical pathology. His teaching only appealed to a few, and his lectures were sometimes attended so scantily as to give point to the story of his ordering the skeleton to be brought into his lecture-theatre that he might address the audience with the usual prelude "Gentlemen."

How then did the school spread from such small beginnings? His few pupils became the leaders of the next generation of surgeons. Sir William Blizard of the London Hospital; Henry Cline of St. Thomas's; Astley Cooper at Guy's; John Abernethy at St. Bartholomew's; Anthony Carlisle at the Westminster; William Hey at Leeds; Philip Synge Physic and his nephew John Synge Dorsey in Pennsylvania received the Hunterian teaching with enthusiasm. These great surgeons transmitted their knowledge in turn to Sir Benjamin Brodie, Sir William Lawrence, Joseph Henry Green, John Collins Warren, and Valentine Mott, who in their generation became teachers at the great schools of medicine in England and in America. The teaching of John Hunter was thus disseminated amongst the rank and file of the profession, whilst the doctrines he enunciated were so novel, so ingenious, and seemingly so heterodox as to become the subject of acrimonious discussion. Attention was thus drawn to them and they quickly found their way into a text-book so widely read as Benjamin Bell's "System of Surgery," and they thus became public knowledge both at home and abroad during the lifetime of their author.

But something more is needed to account for the rapid diffusion of Hunter's teaching. It is to be found in the spirit of devoted affection which he inspired in his pupils and in all with whom he was brought into personal contact. Those, who like myself have been pupils of Huxley, of Rolleston, and of Ray Lankester, can easily enter into their feelings of hero-worship. Adams says of him: "He was almost adored by the rising generation of medical men who seemed to quote him as the Schools, at one time, did Aristotle."

Rough, coarse, and prone to anger as he was in later life, he had the personal magnetism inherent in every great teacher, whether of religion, philosophy, science, or even quackery—a magnetism which attracts kindred spirits, rarely amongst contemporaries, generally in a younger generation. Thus it was with John Hunter. To his pupils he was "the Dear Man" with whom they were in constant communication either by letter or by word of mouth and to whom they looked for guidance and instruction in the experimental methods he had taught them to use in scientific surgery.

THE HUNTERIAN TRADITION.

The Hunterian tradition passed down the next century in two great streams, theory and practice, uniting sometimes but for the most part flowing separately, because it was only now and again that a single mind could embrace the whole. Both streams took their source in a sound knowledge of human anatomy gained by daily dissection. The streams parted early. Blizard, Astley Cooper, Hey, Physic, Gibson, and Dorsey became great operating surgeons and advanced the teaching of Hunter along the lines of arterial surgery, the anatomy and treatment of hernia, and the pathology of fractures and dislocations. John Abernethy, on the other hand, developed the physiological side of surgery and investigated the causes of disease and its non-operative treatment, for he took but little pleasure in the manipulative part of his profession.

Sir Benjamin Brodie was great enough in the second generation to combine the science with the art of surgery—the theory with the practice. He was equally good as a morbid anatomist and as a clinical surgeon, whilst his general knowledge of science enabled

him to fill with distinction the important position of President of the Royal Society. Joseph Henry Green, the Hunterian orator in 1840, alone followed Hunter on the metaphysical side and delved so deeply into philosophy that he soon lost himself in speculation and did but little to advance the practice of surgery.

Sir James Paget in the third generation developed surgical pathology on truly Hunterian lines; whilst Sir William Savory was more interested in the teaching and dissemination of the surgical principles laid down by John Hunter, though he was a skilful operator, and dearly loved to tie an artery or extirpate a tumour so placed as to demand all his knowledge of anatomy.

You, Sir, like myself and many others of the fourth generation hold firmly to the teaching of John Hunter. We recognise with thankfulness the great work which he accomplished, but we realise it was the work of a pioneer and that the fields he pointed out are being explored by methods and by instruments of which he had no conception. The museum, Sir, has always been your especial care, but you have not neglected the equally important subject of teaching both by example and precept. You have shown, too, so enlightened an interest in the habits and customs of the beasts of the field and the fowls of the air as would have drawn you very near to the heart of John Hunter had you been privileged to sit at his feet. To you also he would most certainly have been the "dear man."

THE MENTALITY OF JOHN HUNTER.

The attitude of John Hunter to Nature and the human body always had something of the poetic in it, and was akin to the feeling expressed by Longfellow when he wrote of Agassiz:

> "And Nature, the dear old Nurse,
> Took the child upon her knee
> Saying, "Here is a story book
> Thy Father has written for thee."

Hunter looked upon Nature as a conscious personality. He says: "Everything in Nature involves two consequences, the one beneficial, the other hurtful. But if we understood thoroughly all the remote causes we should probably see its utility in every case." He speaks of muscles as "being conscious of their actions and almost endowed with reason." "Nature," he says, "acts purposively in the repair of dead bone," and "the clot adheres to the side of an aneurysm from a consciousness on the part of the artery of the weakness of its wall." He says in like manner that "Nature lays claim to and removes what she pleases," and he speaks of two surfaces lying in contact with each other and "agreeing mutually not to inflame." He also maintains that the first and immediate cause of the absorption of tissues is "a consciousness in the parts to be absorbed of their unfitness or impossibility of remaining under such circumstances, the action excited by the irritation being incompatible with the natural actions in existence in the parts whatever these are: wherefore they become ready for removal or accept of it with ease."

The blood, too, is for him so living a tissue that the clot "has the power of becoming vascularised in itself," and when blisters and setons have been used as derivatives to draw off the humours he "is unable to ascertain fully how they act, that is, how far the real disease is invited and accepts the invitation."

A MARTYR TO SCIENCE.

I wish now to draw your attention to a new aspect of John Hunter's life. It has always been assumed that the statement was the truth, the whole truth, and nothing but the truth, which was made by Sir Everard Home in 1794—the year after his brother-in-law's death—that "the symptoms of Mr. Hunter's complaint for the last 20 years of his life may be considered as those of angina pectoris and form one of the most complete histories of that disease upon record."

Reading the account of his illness in the light of modern knowledge it seems to me that John Hunter died of syphilitic disease of his arterial system, and that, in addition to the angina pectoris due to this cause, he suffered for many years from cerebral syphilis. Both conditions were due to the action of the spirochætes with which he deliberately inoculated himself in May, 1767. He may be looked upon, therefore, as one of the great martyrs to science. Personally, I do not think he was justified in this martyrdom, for the consequences of his experiment were visited upon his children as well as upon himself, whilst all surgery suffered by the shortening of that life which was advancing its bounds in every direction.

On a Friday in May, 1767, Hunter inoculated himself with pus from a patient suffering from gonorrhœa to determine whether the poison of gonorrhœa was identical with that producing syphilis. Surely that Friday must have been May 22nd, a well-recognised "Egyptian day," or *Dies Maledicti*, when it was most unfortunate to embark upon any new undertaking. The prepuce and glans were scarified and it was noticed that the incisions itched on the second day—May 24th. The prepuce was inflamed on May 26th, and on June 2nd a small ulcer appeared and was cauterised. A slough separated on June 6th and the sore was cauterised a second time. The glans itched on June 7th, and on the following day a second slough detached itself from the prepuce whilst the sore on the glans ulcerated and was cauterised. Sloughs separated from the glans and prepuce on June 12th, and the ulcers healed leaving scars. The lymphatic glands in the right groin enlarged during the week ending June 13th, but they did not suppurate.

The rapidity with which the two seats of inoculation ulcerated and the appearance of a bubo suggest that the pus contained Ducrey's bacillus causing two soft sores. Spirochætes were also present because the gland in the groin began to enlarge again after a time, and in July the right tonsil ulcerated. Copper-coloured spots appeared on the skin in September and the tonsil ulcerated a second time. The administration of mercury soon healed the ulcer but it returned a third and a fourth time. The rash on the skin appeared on three separate occasions, and mercury was then "taken in a sufficient quantity and for a proper time," Hunter says, "to complete the cure. The time the experiments took up, from the first insertion to the complete cure, was about three years." How complete the cure was will be shown! It is certain, therefore, that Hunter also inoculated himself with the *Spirochæta pallida* and that his mercurial course was insufficient. The gonococcus having been inoculated upon skin surfaces did not multiply.

He married Miss Anne Home on July 22nd, 1771. There is nothing to show that she became infected, as it was then understood. John Banks Hunter was born in June, 1772, and lived until 1838; Mary Anne, born in December, 1773, only lived two months. James, born in November, 1774, died in February, 1775. Agnes, the youngest child, born in 1776, lived until 1838. It may be remarked that neither of the two surviving children left offspring and neither was above the average in mental attainments.

Except for an attack of pneumonia in 1759 and occasional poisoned wounds, from which every anatomist suffers from time to time, Hunter considered himself a healthy man until the spring of 1769, when he had some toxic disturbance which, in accordance with the fashion of the time, was diagnosed as "a fit of the gout." It returned in the three following springs but not the fourth. Its place was taken in the spring of this year (1773) by his first attack of serious illness. The record reads: "In the spring of 1773, having met with something which very forcibly affected his mind, he was attacked at 10 o'clock in the forenoon with a pain in the stomach about the pylorus. The sensation was limited to those parts and became so violent that he tried change of position to procure ease. He sat down, then walked, laid himself down on the carpet, then upon chairs, but could find no relief. He took a spoonful of tincture of rhubarb with 30 drops of laudanum without the smallest benefit.

While he was walking about the room he cast his eyes on the looking-glass and observed his countenance to be pale and his lips white, giving the appearance of a dead man. This alarmed him and led him to feel for his pulse, but he found none in either arm. The pain still continued and he found himself at times not breathing. Being afraid of death soon taking place if he did not breathe, he produced the voluntary act of breathing by working his lungs by the power of the will. In this state he continued for three-quarters of an hour, during which time frequent attempts were made to feel the pulse but in vain; however, at last the pain lessened and the pulse returned, although at first but faintly, and involuntary breathing began to take place. In two hours he was perfectly recovered."

This attack of epigastric angina occurred six years after the inoculation with syphilis. It may have been caused by toxic changes in the smaller blood-vessels supplying the vagal nuclei, or it may have been the first indication of syphilitic inflammation at the root of the aorta. I am inclined to think that it was due to cerebral changes rather than to inflammation in the large arteries, for it would hardly have passed off so rapidly without leaving any marked ill-effects. It is noteworthy, too, that from this time until his death, 20 years later, Hunter drank little, if any, wine. Not, we may be sure, because he liked abstinence, but because, as he says, it went to his head.

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FIG. 1.—John Hunter at his house in Leicester-square just after his return from Belle Isle. The sign above the door is the golden calf, and probably the artist intended the two asses to be symbolical of the patients who were going to consult him.

Four years later—in 1777—and again in the spring, he was seized with a severe and dangerous illness again in consequence of anxiety of mind, as he had been obliged to pay a large sum of money for a friend for whom he had gone security and which circumstances made extremely inconvenient.

"At 2 o'clock in the forenoon he ate some cold chicken and ham and drank a little weak punch; immediately after this he went eight miles in a post-chaise. While he was on the journey he had the feeling of having drunk too much but passed the remainder of the day tolerably well; at 12 o'clock at night his stomach was a little disordered, for which he took some caraways and went to bed. He had no sooner lain down than he felt as if suspended in the air and soon after the room appeared to go round; the quickness of this motion seemed to increase, and at last it was very rapid. It continued for some time, then became slower and slower until the whole was at rest. This was succeeded by vomiting which was encouraged and gave him a good night's rest. Next day he was tolerably well but fatigued. The morning after, thinking himself quite recovered, he went out before breakfast, drank some tea and ate some bread-and-butter which he was not accustomed to do. At 11 o'clock he felt his stomach in much the same state as before; in about half an hour the sensation of the room appearing to turn recommenced and continued for some time but not with such violence as in the last attack. He became sick and vomited. The sensation of himself and everything else going round went off, but that of being suspended in the air continued with giddiness. He could now hardly move his head from the horizontal position, and about 2 o'clock was brought home in his carriage, the motion of which was very disagreeable, giving him the sensation of going down or sinking.

"After he went to bed the giddiness and the idea of being suspended in the air increased, and the least motion of the head upon the pillow appeared to be so great that he hardly durst attempt it; if he but moved his head half round it appeared to be moving to some distance with great velocity; the idea he had of his own size was that of being only 2 feet long, and when he drew up his foot or pushed it down it appeared to him to be moving a vast way. His sensations became extremely acute. He could not bear the least light, so that although the window blinds were drawn a curtain and a blanket were obliged to be hung up against it, the fire to have a screen before it, and the bed curtains to be drawn. He kept his eyes closed, yet if a lighted candle came across the room he could not bear it. His hearing also was painfully acute, but not so much increased as his sight. The smell and taste were also acute, everything he put into his mouth being much higher flavoured than common by which means he relished what he ate.

"He remained in this state for about ten days; by this time he was rather better, that is, he could move his head more freely. All his ideas of his present state became natural at the end of ten days, the strange deception concerning his own size was in part corrected, and the idea of suspension in the air became less. But for some time after the fire appeared of a deep purple red. When he got so well as to be able to stand without being giddy he was unable to walk without support, for his own feelings did not give him information respecting his centre of gravity, so that he was unable to balance his body and prevent himself from falling. He gradually recovered from this state, and as soon as he was able went to Bath at the end of August, stayed there until the middle of November, and drank the waters which were thought to be of service to him. He returned to town much better and in a few weeks got quite well."

Here, again, the symptoms point to cerebral rather than to cardiac disturbance, to syphilitic inflammation of the smaller cerebral arteries, perhaps in the nature

of a syphilitic periarteritis. There was vertigo but neither tinnitus nor deafness, so that the auditory symptoms were due to stimulation of the vestibular nerve rather than to changes in the labyrinth. The photophobia was of retinal origin and was due to hyperæsthesia, such as led to exaltation in the senses of smell and taste. The lesions were multiple, and although the results lasted for some time, as in the case of the purple red fire, yet they were compensated in the end.

Hunter's brain adapted itself fairly well to the altered conditions for the next eight years, although his arterial system was undergoing progressive degeneration, and his friends noticed with concern that he was ageing rapidly. At the beginning of April, 1785—

"He was attacked with a spasmodic complaint which at first sight appeared slight but afterwards became very violent and terminated in a fit of the gout in the ball of the great toe. Like the previous attacks it was brought on by anxiety of mind. The first symptom was a sensation of the muscles of the nose being in motion, but whether they really were or not he was never able to determine. This sensation returned at intervals for about a fortnight, attended with unpleasant feelings in the left side of the face, lower jaw, and throat, which seemed to extend into the head on that side and down the left arm as low as the ball of the thumb, where it terminated all at once. These sensations were not constant but returned at irregular intervals. They soon became more violent, attacking the head, face, and both sides of the lower jaw, giving the idea that the face was swelled, particularly the cheeks, and sometimes they slightly affected the right arm. After they had continued a fortnight they extended to the sternum, producing the same disagreeable sensations there and giving the feeling of the sternum being drawn backwards towards the spine as well as that of oppression of breathing, although the act of breathing was attended with no real difficulty. The heart seemed to miss a stroke at these times, and when feeling the pulse the artery was very much contracted, often hardly to be felt, and every now and then the pulse was entirely stopped. He was afterwards attacked with pain in the back about that part where the œsophagus passes through the diaphragm, the sensation being that of something scalding hot passing down the œsophagus. He was next seized with pain in the heart itself, and last of all with a sensation in the left side nearly in the seat of the great end of the stomach attended with considerable eructations of wind. All these symptoms, those in the stomach and nose only excepted, were in addition to the first, for every attack began with the first symptom. The complaint appeared to be in the vascular system, for the larger arteries were sensibly contracted and sore to the touch, as far as they could be touched, principally in the left arm.

"These symptoms increased in violence at every return, and the attack, which was most violent, came on one morning about the end of April and lasted about two hours. It began as the others had done, but having continued about an hour the pain became excruciating at the apex of the heart. The throat was so sore as not to allow the attempt to swallow anything, and the left arm could not bear to be touched, the least pressure upon it giving pain. The sensation at the apex of the heart was that of burning or scorching, which by its violence quite exhausted him, and he sank into a swoon or doze which lasted about ten minutes, after which he started up without the least recollection of what had passed or of his preceding illness. He then fell asleep for half an hour and awoke with a confusion in his head which went off in a few days."

These attacks were of a more complicated nature than the previous ones. They were due in the main to syphilitic changes taking place in the heart and aorta, and were thus anginal in character, but in part they may have been due to alterations in the cerebral circulation. He went to Tunbridge in the August of this year, 1785, but finding no improvement there he travelled to Bath in September, and in December he was again in London, where he performed his first operation for the cure of aneurysm by ligaturing the artery in its continuity.

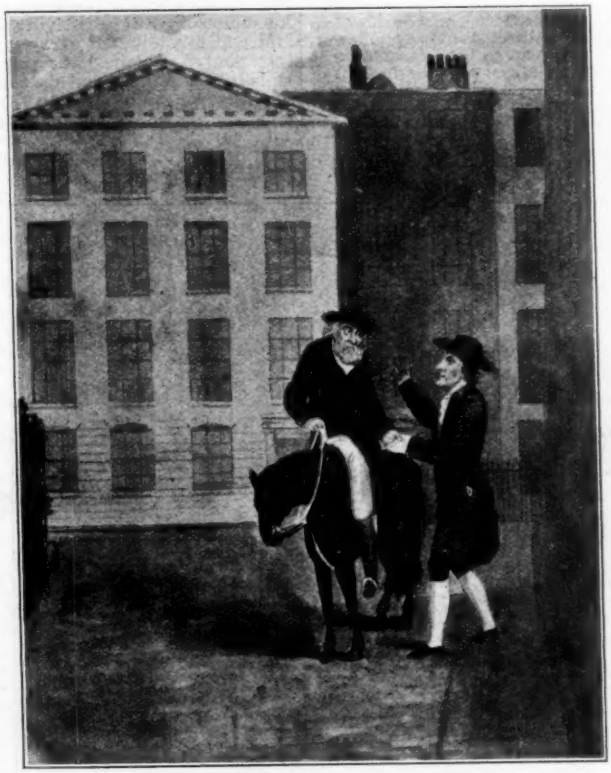

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FIG. 2.—John Hunter showing his new house in Leicester-square, the suggestion being that he is touting for patients in addressing Martin van Butchell.

The attacks of angina continued, though they did not increase in severity throughout the year 1786, until he became so accustomed to them that they formed a part of his daily life. He was unable, in consequence, to take much exercise and passed his time in superintending the printing and publication of the "Observations on the Animal Œconomy" and the "Treatise on the Venereal Disease," which were issued from his own press in Castle-street, Leicester-square. In the following year, 1787, Sir Joshua Reynolds painted the striking portrait which has made his appearance so familiar to all of us.

He wrote to Jenner in May, 1788, saying that a severe indisposition for three weeks had prevented him from writing, although "when two guineas tempt me I cannot resist." It is noteworthy that the first attack of these complaints was produced by an affection of the mind and every future attack of any consequence arose from the same cause, and although bodily exercise or distension of the stomach brought on slighter attacks it still required the mind to be affected to render them severe, and as his mind was irritated by trifles these produced the most violent effects on the disease. His coachman being late or a servant not attending to his orders brought on the spasms, while a real misfortune produced no effect.

About the beginning of December, 1789, he was attacked with a total loss of memory when he was spending the evening with a friend.

"He did not know in what part of the town he was, nor even the name of the street when told it, nor where his own house was. He had no conception of any place existing beyond the room he was in and yet was perfectly conscious of his loss of memory. He was sensible of impressions of all kinds from the senses and therefore looked out of the window, although rather dark, to see if he could recognise the situation of the house.

"This loss of memory gradually went off and in less than half an hour he was recovered. About a fortnight afterwards, as he was visiting his patients in the forenoon, he noticed occasionally a little giddiness in his head and by 3 o'clock it was attended by an inclination to vomit. The giddiness became severe, but went off again about 7 or 8 o'clock; about 9 or 10 o'clock it returned with more severity and when going to bed about 11 o'clock he had entirely lost his centre of gravity, although he could move his limbs as the will directed. Light became offensive and everything had a kind of yellow cast; sounds became more acute than usual; objects had lost their true direction; a perpendicular, for instance, seemed to him to lean to the left, making as near as he could conjecture an angle with the horizon of 50 or 60 degrees. Objects were also smaller than the natural recollection of them; his idea of his own size was that of being only 4 feet high; objects also appeared to be at an unusual distance as if seen through a concave glass. Motion of his head was extremely disagreeable; he therefore moved it with great caution, although coughing and sneezing did not affect it. The disposition to sleep was a good deal gone, an hour or two in the 24 being as much as could be obtained. These symptoms were much the same for a week and began to diminish gradually, so that in a fortnight he was able to sit up and in three weeks went for an airing in his carriage. He felt a pain in the joint of his great toe which inflamed gently but soon left it.

"His recovery from this indisposition was less perfect than from any of the others. He never entirely lost the oblique vision, his memory was in some respects evidently impaired, and the spasms became more constant."

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FIG. 3.—Hunter's buffalo carriage in which he used to drive down Piccadilly from Earl's Court to Leicester-square. The drawing suggests that he would get fuller advertisement if he rode on a dromedary accompanied by a black servant.

These attacks were probably due to cerebral changes similar to those which caused the first symptoms in 1777, more than 12 years before, and perhaps not far away from the areas originally involved, although there is no doubt that the disease in the large arteries had made considerable progress. I am not a neurologist, but so far as a surgeon can guess the lesions may have been situated in the immediate neighbourhood of the basal ganglia or even still nearer the cerebral cortex. I do not think they were in the cortex itself, nor do the spinal cord or the peripheral nerves seem to have been affected. The subjective sensation in the nose and the pain in the great toe might help to localise them more accurately.

The illusions as to size and shape may, perhaps, be accounted for by changes occurring in those "silent areas" of the brain which it is so difficult to explore experimentally. It is certain that a generation which knew nothing of the individual functions of the brain, and which attributed every form of toxic absorption to "gout," explained the pain in John Hunter's toe as being caused by that disease, just as in later years we have been contented to say that he suffered from angina pectoris without looking farther for the cause. The permanency of the defect in vision and the impairment of memory also point to widely spread changes in the brain which were almost certainly vascular for, as will be seen presently, no gross lesion was found after death. The sleeplessness and the increasing irritability must be attributed rather to changes taking place in his larger arteries than to lesions in the brain.

He never went to bed at this time without having an attack which was brought on by the act of undressing. They came on in the middle of the night, and the least exertion and conversation after dinner was attended by them. He felt obliged, therefore, to confine himself within a certain sphere of action and to avoid dining in large companies. Even operations in surgery, if attended with any nicety, now produced the same effects.

In the autumn of 1790 and in the spring and autumn of 1791 he had more severe attacks than during the earlier periods of the year, but of not more than a few hours' duration. In the beginning of October, 1792, one was so violent that Everard Home, who was present, thought he would have died in it.

"The end came on Oct. 16th, 1793, when in his usual state of health, he went to St. George's Hospital, and meeting with some things which irritated his mind and not being perfectly master of the circumstances he withheld his sentiments, in which state of restraint he went into the next room and turning round to Dr. Robinson, one of the physicians of the hospital, he gave a deep groan and dropped down dead."

The post-mortem examination showed a small heart in a thickened pericardium. The coronary arteries

were bony tubes which were with difficulty divided by the knife, when their transverse sections did not collapse but remained open. The mitral valves were partially and irregularly calcified and the aortic valves had lost their natural pliancy. The aorta, a little beyond the semilunar valves, had its cavity larger than usual, putting on the appearance of an incipient aneurysm. The inner coat of the vessel had entirely lost its natural polish and was studded with opaque white spots raised higher than the general surface. The cranium and dura mater were in a natural state but the pia mater was congested. The internal structure of the brain was carefully examined, and the different parts both of the cerebrum and of the cerebellum were found in the most natural and healthy state. The internal carotid arteries were ossified and the vertebral arteries lying along the medulla oblongata had also become bony, whilst the basilar artery had opaque white spots very generally along its coats.

THE CAUSE OF HUNTER'S DEATH.

A review of these facts about the illness and death of John Hunter show that he died with widespread disease of his arterial system—the largest as well as the smallest arteries being involved. He may have inherited some family weakness of the vascular system, for his brother William had died ten years before at exactly the same age of 65 after suffering the vague symptoms associated with arterial degeneration. The post-mortem examination of John Hunter's brain showed no gross lesions—such as a gumma—which were not likely to be overlooked by the trained anatomists who carried it out. The cerebral symptoms from which he began to suffer two years after he had inoculated himself with syphilis, and which continued intermittingly until the time of his death 20 years later, were, therefore, due to lesions of a microscopic character. They were caused by cerebral syphilis of the interstitial variety, that is to say, they were due to the action of toxins produced by the *Spirochæta pallida* in the lymphatic sheaths of the smaller blood-vessels. These changes in the outer coat of the arterioles interfered with their vasa vasorum and so with the nutrition of the middle coat, thus leading to thrombosis or even complete obliteration of the little vessels as a consequence of the endarteritis. Such a sequence of events recurred several times and were more frequent and severe as he grew older and the arteriosclerosis became more pronounced. We can only be thankful that the stress of the disease fell upon the deeper parts of the brain, and that his intellectual faculties were so little impaired that he could give sound judgment in consultation, invent new methods of operating, and retain those powers of collecting which enabled him to form his magnificent museum.

It never seems to have occurred to Hunter to associate any part of his ill-health with the inoculation experiment of 1767; indeed, he says expressly: "It would appear that some parts of the body are much less susceptible of the lues venerea than others; and, not only so, but many parts as far as we know are not susceptible of it at all. For we have not yet had every part of the body affected; we have not seen the brain affected." How great, therefore, would have been his joy if his cerebral cortex could have looked down upon the great basal ganglia of his brain and recognised that parts of them were suffering from the effects of the venom which he had himself introduced into his system so many years before. *We* look upon him as a martyr to science; *he* would rather have considered that the fresh knowledge was worth the penalty he paid to gain it. It is marvellous to us that he could accomplish so much, crippled as he was mentally and physically.

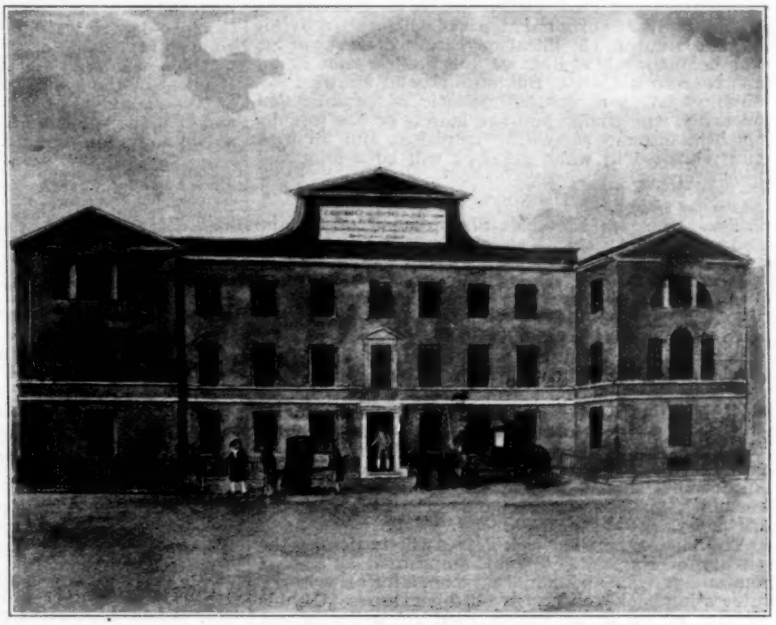

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FIG. 4.—Hunter's body being removed from St. George's Hospital in Mrs. Hunter's sedan chair with his chariot following behind. Note the two magpies, one on and one over the carriage, "one for sorrow, two for joy."

HUNTER BEING DEAD YET SPEAKETH.

Whilst praising John Hunter and his pupils for what has been done in the past, it is the duty of the orator to point to the influence of his teaching on the present generation of surgeons and to call attention to any outstanding work which may have been executed since the last oration was delivered in his honour. His spirit still lives and exerts its influence upon those of the younger generation of surgeons who are endowed with a portion of his originality of thought and action stimulating them to attack and advance along old lines which many had long since abandoned as useless.

THE HEART SUBDUED TO THE HAND OF THE SURGEON.

Sir Lauder Brunton, in the year 1902, suggested the possibility of treating mitral stenosis by surgical methods. He had already performed some preliminary experiments in the dead-house and upon animals, but ill-health and the generally expressed feeling which is always against any new operation involving great risk to life prevented him from carrying his design into execution upon the human subject. Nothing further was done in this country, although it had long been known to physiologists that the healthy mammalian heart could be handled with impunity, whilst

surgeons had repeatedly sutured cardiac wounds. At any rate, nothing *was* done, and it was left to Prof. Elliott C. Cutler, of the Western Reserve University at Cleveland, with the help of Dr. S. A. Levine and Dr. Claude S. Beck, to subdue the diseased human heart to the hand of the surgeon. Lately, whilst visiting the United States, I had the good fortune to make the acquaintance of Prof. Cutler and to see him operate on a dog. As the original idea was put forward by Sir Lauder Brunton, the lineal successor of Harvey at St. Bartholomew's Hospital, we must regret that it did not bear fruit there. But no one who knows Prof. Cutler, young, generous, enthusiastic, painstaking, and scientific, will grudge him the laurels he has won by his brilliant and successful operation, and all wish him godspeed in what we hope will be a long and prosperous career.

NECROLOGY.

The terms of the trust, Sir, demand of me the melancholy duty that I should draw your attention for a few moments to the losses which British surgery has sustained since the last oration was delivered. Death has been busy in our ranks during the last two years. Very noticeable is the gap left by the departure of Sir William Macewen whilst still in the full exercise of his mental and physical powers. A surgeon of such originality that he is worthy to be placed amongst the greatest of his own century. A pioneer in the surgery of the brain, in the surgery of the lung, and in the study of the infective inflammations of bone. His name seems likely to be handed down to future generations by that operation for the cure of knock-knee which should become less and less frequent as rickets becomes more rare under the influence of a better hygiene during childhood.

The name of Sir Frederick Treves will live long in the history of England. To us he appeared as a good anatomist, a fine abdominal surgeon, a fluent writer of interesting books, and a travelled gentleman. By his prompt action in an unparalleled crisis he showed himself master of the greatest attribute of a surgeon —the ability to take upon himself infinite responsibility mindful of the Hippocratic maxim that time is urgent, experience deceitful, and judgment difficult.

Mr. W. H. A. Jacobson, "the gentle cynic," and the author of the first satisfactory text-book on operative surgery in the English language, abandoned his profession at the height of his reputation, taking with him the sympathy of all his colleagues and friends.

What shall be said of Mr. S. G. Shattock—the humble-minded disciple of John Hunter, whose name he venerated and whose methods he copied, striving faithfully and zealously to advance and improve the knowledge of morbid anatomy in which, like his Master, he excelled beyond his fellows? Very few are permitted to gain the confidence, the esteem, and the affection of a whole profession. Shattock did so because he was truly the helper and adviser of all who sought him.

Three of our colleagues on the Council of this College have left us since you, Sir, delivered the last oration in 1923—Sir William Thorburn, Sir Charles Ryall, and Mr. W. Harrison Cripps.

Sir William Thorburn after an arduous and useful life at Manchester, where he did much to advance the surgery of the spine, saddened by domestic affliction, the direct outcome of the war, had just settled in London and was looking forward to a period of leisure when death seized him.

Sir Charles Ryall we miss because he was as genial as he was trustworthy in all matters committed to his charge, and to him the Cancer Hospital owes much.

Mr. Harrison Cripps possessed talents which—when combined as they were in him—are rare amongst us, first-rate business capacity, great powers of administration, and high surgical skill. He spoke but rarely at our meetings, yet his opinions always carried weight and his views usually prevailed.

Nor must I omit to mention those who worthily maintained the position of surgery in the provinces and whose loss we deplore: Mr. G. P. Newbold; Mr. R. A. Bickersteth, of virtuous father virtuous son; and Mr. George Heaton, the first two of Liverpool, the last of Birmingham. All pupils of my own.

CONCLUSION.

My task, Sir, is ended, and in bringing it to a conclusion I would ask you to remember that if Hunter with the knowledge and means at his command seems to us to-day to walk haltingly or even often to have gone astray, shall not we seem to have done the same to those who read our story a hundred years hence? It is one of the lessons of history that each age steps on the shoulders of the ages that have gone before and that the value of each generation is in great part a debt to its forerunners.

The oration finished with the exhibition of a series of lantern slides, four of which are here reproduced, made from water-colour sketches for Jesse Foot who wrote a scurrilous life of John Hunter. They show Hunter as he appeared to his contemporaries, and not as he was idealised by Sir Joshua Reynolds in his well-known portrait. Sir D'Arcy Power stated that he was indebted to his friend, Mr. C. J. S. Thompson, for permission to show the drawings which are contained in a volume in the possession of the Wellcome Historical Museum.

THE DIAGNOSIS OF UNILATERAL PHRENIC NERVE PARALYSIS.

AN IMPORTANT POINT IN MEDIASTINAL LOCALISATION.

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THE diaphragm belongs by origin to the muscles of the neck, but in the process of the evolution of the body it has shifted its position to a lower plane while still retaining its original nerve-supply. The shift has thus entailed the development of a phrenic nerve trunk on each side, which in proportion to its length is liable to become involved in lesions of neighbouring organs.

From the frequency with which these neighbours are affected by disease we might expect unilateral phrenic paralysis to be a not uncommon event, a view which seems confirmed by the fact that 15 of the 30 cases on which this paper is based have been observed in the last 12 months. Yet, in general, the clinical diagnosis is one not often made, and the literature on the subject is scanty and unsatisfying, facts which suggest the existence of inherent difficulties such as have led to the condition being overlooked. Indeed, these difficulties are very real. One is obvious and ever present. We have not to deal with a simple muscle exerting a straightforward easily ascertained action upon fixed points, but with a double sheet of complex fibres hidden deep in the body, the actions of which are far from simple, and only to be recognised by effects which are not only for the most part indirectly produced, but are always complicated by the interfering action of other muscles. Other difficulties will appear in the course of this paper.

Literature.

The text-books in general state that when the whole diaphragm is paralysed there ensues overaction of the intercostals and of the accessory muscles of respiration, together with inspiratory recession of the epigastrium. When one half only is affected there may be limited propulsion of the epigastrium on the affected side. Oppenheim[1] states that Litten's sign may be absent and the respiratory sounds faint, and concludes that unilateral paralysis is difficult to detect. Nesbit[2] diagnosed a case as paralysis of the left phrenic nerve. At first there were over expansion and increased resonance of the left side of the chest. Later, dullness appeared over the root of the left lung in front. The case was one, however, of gradual

obstruction of the bronchi, and the post-mortem report lacks mention of involvement of the phrenic nerve. Monographs on mediastinal tumours contain but little mention of phrenic paralysis, and give no description at all of the resultant physical signs. Morriston Davies [3] has recommended division of the phrenic nerve on one side for persistent infections of the corresponding lower lobe because it controls the expansion of this area. He does not, however, describe the physical signs which result from the operation. Schroeder and Green [4] have produced the most important monograph on the subject. They describe a case in which the left phrenic nerve was torn during the removal of a tumour from the neck. After some temporary discomfort and increased rate of respiration the man was able to resume work at the end of three weeks. Nothing is said about the physical signs which resulted from the torn nerve, save that some dullness developed at the lower part of the left chest. These authors then made experiments on dogs, cutting one or both nerves. Their research was chiefly concerned with degeneration of the diaphragm. They gave a long survey of the literature of phrenic nerve lesions, records of which were inconclusive; they concluded that in man and most mammals a fringe of diaphragm is supplied by some of the lower intercostal nerves, but that this supply is not effective as a substitute for the innervation by the phrenics. Their most important conclusion was that division of one phrenic nerve is not necessarily fatal.

In the Arris and Gale lecture, 1919, on Collapse of the Lungs,[5] I described some experiments carried out on rabbits. In these the animal was killed, generally under prolonged anæsthesia, at varying periods after section of the phrenic nerve on one side. Under these circumstances areas of deflation were found in both lungs, but were more marked on the homo-lateral side. The parts affected were (1) the apices of both lower lobes, (2) the adjacent parts of the upper lobes, (3) the free margins of the lower and to a less extent of the upper lobes. Section of the right nerve produced a greater effect than section of the left. The collapse was more marked at the end of three days than at later periods.

Clinical Material.

The material on which this communication is based consists of a series of 30 cases, 21 of which came to post mortem; 15 have been seen in the last 12 months. In six there was a history of syphilis. In these no complicating condition could be found in the neck, mediastinum, or abdomen, and four of them have recovered. A seventh was a case of aneurysm, confirmed post mortem. In three cases the condition was due to primary glandular enlargement. Two came to post mortem. In 12 patients there was a primary growth in the neighbourhood of the root of the lung. Ten were verified post mortem, the thymus being the probable starting-point of the growth in two. The other two died after leaving hospital. In seven other instances the condition was due to malignant deposits secondary to primary growth elsewhere. All came to post mortem. In the remaining case, a boy who recovered, the lesion was probably due to tuberculous mediastinal glands.

Anatomy of the Phrenic Nerves.

The phrenic nerve derives its fibres from the anterior primary divisions of the spinal nerves, mainly and constantly from the fourth, and variably from the third and fifth cervical. It has a fairly constant communication with the nerve to the subclavius (C 5, C 6), from which nerve further fibres may be derived. It descends usually in front of, but sometimes embedded in, the substance of the anterior scalene muscle and thence, passing downwards between the subclavian artery behind and the subclavian vein in front, gains the mediastinum, where it is closely related to the subclavian artery. So far the course and relations of the right and left phrenic nerves are similar. In this the first part of its course I have found the nerve involved and constricted by lymph glands in seven cases, four of which were on the left side.

In the mediastinum the relations differ on the two sides of the body. On the right side the nerve comes into close relationship with the innominate vein and superior vena cava, and follows the latter until the reflection of the pericardium is encountered. In the upper part of its intrathoracic course the nerve lies about one-third of an inch in front of the right lung. The right vagus is not a near relation. On the left side the phrenic enters the mediastinum in front of the left subclavian artery, and, passing downwards in front of the arch of the aorta, gains the pericardium. In this part of its course the nerve is in close relationship to the left innominate vein for about half an inch, and to the aorta for about 2 inches. The left vagus, prior to giving off the recurrent laryngeal nerve, crosses posteriorly to, and then lies half an inch to the inner side of, the phrenic. Between the arch of the aorta and the pericardium the root of the lung is in an immediate posterior relation to the nerve. The remains of the thymus are also near the nerve and anterior to it. The main mass of mediastinal lymph glands lies behind the arch of the aorta and internal to the phrenic nerves. In this part of its course I have found the right phrenic nerve implicated in four instances, and the left nerve in six. The superior vena cava on the right and the vagus on the left are liable to be involved at the same time.

On the pericardium the nerves are embedded in a fibrous sheath on the outer surface of the pericardium between it and the pleura. The left nerve is on a plane somewhat anterior to that of the right. Near the diaphragm they frequently branch into posterior and antero-lateral branches, and the latter subdivide to supply the anterior and lateral parts of the diaphragm arising from the eleventh and anterior parts of the ribs. In this region each nerve was found to be involved in two cases. The lesion generally arises from an implanted secondary neoplastic growth, or from the invasion by such growth of an adhesion extending from the lower and anterior part of the mediastinal surface of the upper middle or lower lobes. In several cases the nerve has been affected at more than one point.

Diagnostic Criteria.

During the progress of investigation a certain group of clinical signs, to be described in a subsequent paragraph, came to be regarded as pointing to unilateral phrenic paralysis. The diagnosis was not considered established unless these signs were confirmed by: (*a*) post-mortem evidence of a point of pressure on the nerve combined with macro- and microscopic change in the diaphragm; or (*b*) X ray evidence of defective movement of one side of the diaphragm at a time when the presence of any complicating factor, such as pleural effusion, could be excluded. Of 20 cases which showed this limitation of movement on X ray examination, 13 were subsequently confirmed post mortem.

Concerning X Ray Examinations.—Verification of the diagnosis by X ray or post-mortem examination appears simple, but there are points of difficulty in connexion with each, and these are of such importance that they must be dealt with in detail. Most patients with phrenic paralysis are too ill for prolonged examination, and cannot tolerate the supine posture for any length of observation. The X ray investigator does not make a sufficiently detailed examination of the diaphragm unless especially requested to do so. Even when his attention is focused on this point the outline of the diaphragm may be far from clear. On deflation the lung becomes somewhat opaque to X rays, both in and out of the body, and this obscures the view and may give rise to a false report of the presence of fluid.

The typical appearance is well described by Woodburn Morison.[6] The diagnostic feature is the "reversed movement" of the paralysed half of the diaphragm, which not only does not descend, but may even ascend, while the sound half is contracting.

Morison draws attention to the fact that this is best seen during quiet breathing.

The appearance of a "high diaphragm," often considered typical, is not by any means always present, and slight elevation, when it does occur, can readily pass for a normal difference in height. If the patient be requested to take a deep breath the abnormal movement may be obscured, either by the excessive contraction of the sound side dragging down the paralysed side, or possibly by nervous impulses of greater intensity breaking through the nerve block. Or, again, since the conscious deep respiration following the request will be of thoracic type, neither half of the diaphragm may be depressed. Reports such as "some restriction of movement," "scarcely any movement," "slight movement" have been given for cases in which the clinical diagnosis was clear during life and confirmed post mortem.

In several of my cases another sign of considerable interest has been observed—namely, late inspiratory displacement of the mediastinum to the unaffected side. A further difficulty arises when the lung or diaphragm on the paralysed side is adherent to the chest wall. In this event definite diagnosis by X ray is impossible.

Concerning Post-mortem Examination.

One difficulty exists in the fact that but few of these cases die without the presence of some complication such as pleurisy, with or without effusion, bronchial obstruction, &c. In my series of 21 post-mortems only five subjects were free from some such complicating lesion. Another difficulty is the relative absence of clearly demonstrable changes in the phrenic nerve below the level of the lesion. This subject is fully dealt with later.

As the first step in the post-mortem, it is absolutely essential to obstruct the trachea, in order to prevent the usual deflation of the lungs when the thorax is opened. The trachea should be exposed in the neck and an opening made into it just large enough for the insertion of a cork. A cork is introduced, pushed just below the opening, and a stout ligature firmly tied round the trachea against the cork. The sternum and cartilages can now be removed by cutting through the diaphragm below the costal margin, lifting up the lower ribs, and cutting each costal cartilage under inspection, up to and including the second. The clavicles should then be divided at the junction of the middle and outer thirds and the inner portion removed, the first ribs cleared above carefully and divided by the saw opposite the section through the clavicle, and the whole sternum removed with the neck muscles attached. This leaves an easy and clear dissection of the phrenics.

A survey should then be made of the general position of the organs. The striking feature is the retraction of the upper lobes of the lungs in the middle line, the upper mediastinum and pericardium being left widely exposed. The tip of the lower lobe will be found in the vertical or coronal plane of the phrenic nerve, and will not be visible till the thoracic wall is pulled outwards. This lung retraction is more pronounced on the side of the paralysed nerve. The upper lobes are inflated and pale, and tend to encroach on the area occupied normally by the lower lobes. This is particularly marked in the paravertebral grooves where the upper lobes may extend as low as the fifth or sixth ribs. The lung on the affected side is smaller than its fellow. The position of the liver is frequently of interest. With right phrenic paralysis the lower border will be horizontal at right angles to the long axis of the body. With left-side paralysis the angle between the lower border and the median vertical plane will be more acute than normal. It may be reduced to some 30°. This displacement is due to the excessive and unbalanced action of the non-paralysed side, the liver being fixed to the diaphragm at the opening of the inferior vena cava. On examining the lungs after removal, the lower lobes are relatively shrunken and show areas of deflation, marked in the paravertebral grooves, and complete at the free margins; the upper lobes, except near the intralobar fissure where the condition may resemble that in the adjacent lower lobes, look natural or more pale than normal, and are fully distended. On the whole the lungs are smaller than normal, with inflated upper lobes and partially unexpanded lower lobes.

In the diaphragm the following changes may be seen on the affected side. The colour may be normal or appear more brown and less purple than usual. The vessels may be dilated. The connective tissue fat is usually diminished in amount, this being best observed from the peritoneal surface. To the touch the muscle feels thin, and the pleura and peritoneum are found to strip too easily. When closely inspected the muscle sheet presents a plicated appearance, the individual bundles of muscle-fibres being unduly differentiated because they are more separate than normal. Differences in height have not been observed, but the length from attachment to insertion of corresponding portions of muscle on the two sides is not altered. In three patients the rather unusual condition was found of pleural fluid pressing the diaphragm down to such an extent as to make the lower surface convex. In each case this occurred on the paralysed side only.

In all cases microscopical sections of corresponding areas of muscle from the two sides were examined. Muscle from the paralysed side shows "clumping" of individual muscle-fibres, so that, instead of each being separated from its neighbour, they occur in close apposition in groups numbering up to 20. This explains the appearance of plication seen by the naked eye. The muscle striation may be defective and the number of nuclei increased. Fatty degeneration has not been observed. These changes are probably due to to disuse and, up to six months' duration, do not seem to vary much in different specimens. In one specimen, probably of three years' duration, much increase of fibrous tissue had taken place, but many muscle-fibres could still be recognised. In three cases marked by progressive bronchial obstruction, in which terminal dyspnœa had been extreme, the muscle-fibres on the unaffected side were broken into squares and parallelograms, calling to mind the condition of fragmentation seen in heart muscle.

In respect of muscle changes secondary to nerve lesions Platt and Bristow[7] state that (*a*) disuse atrophy is the direct result of the severance of axis-cylinders (denervation), and (*b*) trophic changes are dependent always on the existence of some form of irritation acting on vaso-motor and sensory axons which still retain their integrity.

The anatomical lesion affecting the nerve may be of three kinds: (1) The nerve may be completely surrounded by growth which in some instances even invades its sheath. In two of my cases the nerve tore easily in the growth. (2) It may be compressed between two enlarged glands and show an obvious constriction mark when they are separated. (3) It may be constricted or pressed out in the form of a ribbon by inflammatory fibrous tissue. Below the point of involvement the nerve trunk in some instances appeared quite normal. In others, though normal in colour, it was attenuated, while in others again it was swollen and of creamy or light yellow colour. In all cases the phrenic nerves of both sides have been sectioned and stained in the ordinary way, and in a considerable proportion the special methods for demonstrating nerve degeneration have been applied, but without revealing any startling changes. Staining by Marchi's method shows nothing abnormal except slight changes in the myelin sheath only at the point of constriction; by Weigert Pal, nothing definite; by Cajal—for nerve fibrils—nothing precise. In a transverse section stained by Van Gieson there may be seen shrinking of the nerve from the sheath, irregularity in outline of nerve fibres, defect of staining of the axis-cylinders, and some increase of nuclei of the endoneurium, but all these changes are slight and debatable, especially in view of the "artefacts"

which may result from post-mortem changes and handling.

Pressure Effects.

The absence of more definite pathological lesions in the nerves might appear to throw doubt on the evidence on which my thesis is based. However, there seems to be little doubt that pressure upon a nerve may cause complete paralysis without producing histological changes such as we can, at present, recognise. In two of my cases of this series the lesions involving the phrenic nerve also involved the vagus central to the origin of the recurrent laryngeal nerve. That the left vocal cords of these patients were paralysed admits of no doubt. Post mortem the laryngeal muscles and recurrent laryngeal nerves showed exactly the same slight changes as the diaphragm and phrenic nerves. Dr. Wilfred Harris allows me to state that in a case of median nerve paralysis due to a fibrous band full movement followed within 24 hours of the operation which relieved the pressure. Similarly, though for a time the paralysis may be marked, the rapid recovery which may be seen in crutch palsy or Saturday night paralysis negatives the idea that loss of function is necessarily accompanied by structural changes which can be demonstrated. Buzzard and Greenfield,[8] discussing long-continued pressure, write, "In the earlier stages the condition is one of loss of function without destruction of axis-cylinders." Oppenheim,[9] quoting Dejerine and Bernhardt, states that organic changes at the point of moderate pressure are slight and limited to the myelin. If, however, compression is severe or prolonged changes may extend to the whole distal section of the nerve. They note, however, that the rapidity with which recovery takes place when a nerve is freed from compression by callus or bone shows that these organic changes are not always present. The prevalent teaching, in fact, indicates that the relative absence of histological nerve change post mortem does not invalidate a diagnosis of paralysis during life. With regard to the degree of pressure necessary to prevent the conduction of a stimulus, very different results have been given by Ducceschi,[10] Meak and Leaper.[11]

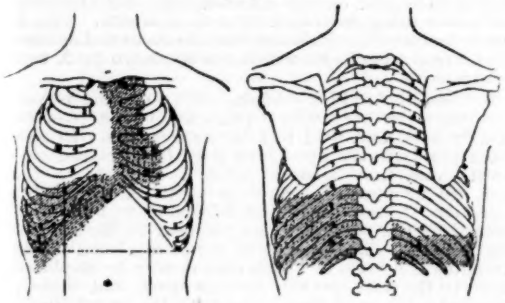
In some experiments performed in 1908 I found that three minims of 5 per cent. carbolic acid or 10 per cent. formalin injected into the pleural cavity, or applied to the phrenic in the neck of a rabbit, paralysed the diaphragm of that side, inhibiting the normal respiratory impulse. Electrical stimulation of the phrenic nerve in the neck above the block evoked contraction of the diaphragm, which again did not contract when the electrical stimulation ceased. Other motor nerves behaved similarly. These observations suggest that nerve-block may be partial, and that slight degrees of pressure which can obstruct weak impulses may prove ineffective against the passage of impulses from stronger stimuli.

The whole question of the effects produced by pressure on nerves still remains to be worked out. There is, however, ample justification for assuming (*a*) that pressure sufficient to paralyse a nerve may readily occur in the body; (*b*) that such pressure need cause but little objective change in the nerve; (*c*) that degenerative changes are not demonstrable in the muscle at an early date; and (*d*) that nerve-block may be partial.[12]

Physical Signs of Phrenic Paralysis.

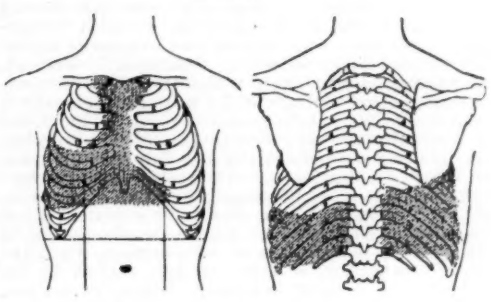
The physical signs will be dealt with in the order of importance. The examination should be made with the patient sitting and the back inclined at an angle of 45°, the head resting on a pillow. He should not be allowed to talk. A skin pencil should be used to mark the extent of resonance. When examining the back he should draw the knees up and rest the elbows on the knees and chin on the palms. The whole examination should be gone through with quiet, natural respiration before any deeper breathing is requested. The signs described are detected in this stage—deep breathing may reveal very little abnormal.

FIG. 1.



Paralysis of left phrenic.

FIG. 2.



Paralysis of right phrenic.

1. *Manubrial Lack of Resonance.*—This will be found to be increased. The normal pleura is attached along a line extending from the central point of the junction of the manubrium and gladiolus to a point behind the sterno-clavicular articulation. The lack of resonance extends outwards in planes roughly parallel to this line; the lower end advances somewhat more than the upper, so that when the junction of the inner and middle thirds of the clavicle is not resonant the inner border of the resonance is vertical and parallel to the middle line of the sternum, meeting the deep cardiac dullness. When the left phrenic is paralysed the left side only is defective. When the right is affected, both sides are liable to be deficient in resonance. Such "dullness" is often ascribed to enlarged mediastinal glands which may not be found at the post-mortem. Regarded as lack of resonance, caused by retraction of the lung border, the findings are more intelligible. When examined after a deep breath the areas of lack of resonance will diminish to extend again when quiet breathing is resumed.

The structures which, when abnormal, can by pressure prevent the expanded lung filling the pleura, are the thymus, aorta and deep mediastinal glands, pleural adhesions, and possibly affections of the œsophagus. There are few glands between these structures, and the manubrium and these are but seldom affected. In very few instances can the above pathological conditions produce by pressure a lack of resonance which returns with a deep breath. When both phrenic nerves are involved, the extreme thoracic effort produces a further expansion of the upper lobes and renders this area resonant.

2. *Lower Level of Pulmonary Resonance.*—This is raised. Posteriorly it may extend as high as the seventh rib in the scapular line. When the left

phrenic alone is involved the elevation is likely to be on the left side only. With right phrenic involvement the level on the left may be found as high as the ninth and on the right a little higher—e.g., eighth. Anteriorly on the right side the level may be as high as the third space. If the level is marked out all round it will be found to rise in the posterior axillary line and again between the nipple line and the sternum. The explanation of the first-mentioned elevation is that at this point the muscle-fibres of the diaphragm are longer than elsewhere, and when paralysed relax to a greater extent. Of the second, that the crus exerts its direct pull towards this point on the chest wall, and when this tension is eliminated the anterior paralysed portion of the diaphragm is raised out of proportion to the adjacent and outer part which is less influenced normally by the crus. On the left side the stomach resonance renders percussion in the axilla uncertain. The spleen may occasionally be made out to be raised, as indicated by a rise of the normal level of dullness.

3. *Type of Breathing.*—Normal inspiration is effected by descent of the diaphragm—the so-called "abdominal" element—with raising and expansion of the bony thorax—the so-called "thoracic" element. The relative proportions in which these two elements come into action varies in different individuals, and it is in general true that the more conscious the breathing the more the thoracic element is called into play, also the older the patient the less the thorax is used. The value of deductions as to the relative proportions of the thoracic and abdominal breathing in any case will largely depend on the observer's experience, but it is an invariable rule that conclusions should not be drawn in the early stages of examination, when the patient's attention is more or less turned to his breathing, or from a voluntary forced inspiration. The last will certainly be almost purely thoracic.

With inspiratory descent of the diaphragm the epigastrium should be pushed forward. When both phrenic nerves are paralysed conditions are reversed, and epigastric recession is usually very marked. With unilateral paralysis matters are less simple. In most cases the epigastrium is protruded, but frequently with unsteady or intermittent force. In some normal protrusion is reduced and forms a contrast with the simultaneous thoracic action, which is increased. In a few cases there has been a clear difference of propulsion in the two sides of the epigastrium in favour of the sound side. A test may be applied by laying the hand on the umbilicus, and asking the patient to press it up. With bilateral paralysis this is impossible, but with unilateral paralysis it can be accomplished, and with a considerable amount of force.

The diaphragm, in conformity with the general law governing muscle, acts best when its fibres are under tension. Tension is provided by intra-abdominal pressure and is reduced when the abdominal wall is lax.[13] When such tension is absent the tendency to epigastric recession is greater, as was well shown in one of my cases which developed ascites. The degree of epigastric recession varied with the quantity of fluid, being marked after tapping and disappearing again as fluid reaccumulated. Recession is marked when general wasting has occurred.

With regard to the thoracic element of inspiration, in cases where both phrenic nerves are involved and dyspnœa becomes extreme, thoracic expansion is increased to a very marked degree. In such cases the upper lobes are markedly over-distended and the manubrium becomes resonant, while the signs in the lower part of the chest become more marked.

With unilateral paralysis thoracic respiration is generally increased. Comparison of the two sides of the chest does not always show greater movement on the affected side, indeed the reverse may occur. In a number of these cases thoracic movement is peculiar, inasmuch as the chest is held elevated by the scalenes and expanded by the intercostals, neither of which relax to the usual degree during expiration. These patients are apt to suffer from persistent pain in the shoulder and down the arm. In three individuals with unilateral paralysis who lived for a considerable period thoracic movement on the sound side developed to such an extent that with each inspiration the chest came forward in an arc, the centre of which appeared to lie somewhat outside the opposite axilla. The resultant "swinging" chest is a remarkable object.

4. *Auscultation* reveals a deficient inspiratory murmur on the paralysed side. The expiratory murmur is often of equal length and intensity on the two sides of the chest. The breath sounds may be abnormal, having a puerile or broncho-vesicular character. Voice sounds may be altered, and if examined before a deep breath be taken, ægophony may usually be heard at the lower level of the pulmonary resonance. With a deep breath everything may be altered, and the variations seen on different occasions, even in the same individuals, are remarkable. The differences are readily accounted for by variations in the degree of deflation and air exchange.

5. *Cardiac Dullness.*—Owing to the lung retraction this is increased on the affected side, the abnormal extension being decreased by a deep breath. This is apt to lead to the conclusion that the heart is displaced or enlarged, conditions which can be shown by X rays not to exist.

6. *Cardiac Impulse.*—Again, owing to lung retraction the area over which pulsation is felt may be unduly wide and lead to false impressions. In left-sided paralysis the apex beat may be displaced outwards, and may also be rotated upwards to the fifth rib or fourth space. In right-sided paralysis pulsation, the auricular origin of which can be demonstrated by the polygraph, may appear to the right of the sternum. The apex beat is not displaced unless dyspnœa is severe, in which case it may be displaced down to the sixth or even seventh space, and slightly outwards, but may be obscured by the usual simultaneous over-inflation of the left upper lobe. This is due to overaction on the part of the sound left side of the diaphragm.

7. *Differences in the Movement of the Costal Margin.*—In quiet breathing there will frequently be no difference on the two sides. If a difference is present the costal margin of the paralysed will move outward, more than the normal side. A forced inspiration may either accentuate or diminish the differences according to the proportionate activity of the thorax and diaphragm. Hoover[14] lays great stress on the movement of the lower thoracic margin in cases of pleural effusion, and states that the more horizontal the diaphragm the greater the indrawing of the costal margin and vice versa.

8. *Tracheal Displacement.*—The trachea may be situated mesially or may be displaced, either away from or towards the affected side, whichever that may be.

It has been noted that the signs are the more marked when the right side of the diaphragm is affected. This is no doubt due to the presence of more muscle in the right crus of the diaphragm, the force of which is expended in the postero-anterior direction rather than elsewhere. It tends to form a band between the spine and meso-lateral costal margin, and will be scarcely displaced to the right side by the weaker fibres arising from the ribs in the right axilla. The left crus is much less developed, and will be proportionately less able to resist the corresponding lateral pull. Accordingly, when the right half of the diaphragm is inoperative and this antero-posterior force is in abeyance, the fibres from the left costal margin will more easily displace the central tendon and structures attached to the left.

Arising from the diaphragm along this line of traction is the right side of the pericardium, which is especially reinforced here by fibrous tissue, and is extended upwards to the cervical fascia through the superior cava and mediastinal fascial coverings. This, when controlled by the right crus, must tend to steady the mediastinum and prevent displacement. On the left side the pericardium as a ligament is

practically of no consequence. There will accordingly be a greater tendency to pull the heart and mediastinum to the left when the right side is paralysed than to the right when the left phrenic is affected. The absence on the left side of a distending force on the muscle fibres, such as is constantly exerted by the liver on the right side, must render the left half of the diaphragm normally less efficient than the right, and accordingly the effects of the left-sided paresis less severe than that of paresis of the right side. I think these are reasons for the lesser degree of discomfort when the left side is paralysed.

Symptoms of Phrenic Paralysis.

This communication is not concerned with the general signs and symptoms of mediastinal or other lesions. There are, however, three symptoms which deserve mention because they are directly connected with the phrenic paralysis.

1. *Pain.*—At the onset of paralysis there may be a history of acute pain on the affected side, either over the shoulder and down the arm, or in the neck or thorax. The pain is accentuated on pressure over the scalene and intercostals, and is due to undue stress and fatigue of these muscles.[15] Similar pain may occur behind the sternum owing to the stress of the triangularis sterni and transversalis abdominis, expiratory muscles which also become tender to pressure. These pains are particularly connected with the onset of phrenic paralysis because of the sudden call on these muscles for extra effort to compensate for the diaphragmatic defect, but later they may accompany extra effort due to exertion.

2. *Respiratory Distress.*—Dyspnœa is apt to be well marked at the onset of paralysis, but then diminishes and reaches a stationary condition after 10 or 14 days. As might be expected, this dyspnœa of onset is absent in patients in whom the paralysed half of the diaphragm was previously anchored to the chest wall by adhesions, as was noted in three of my cases. There is considerable difference in the degree of dyspnœa experienced by different individuals. Some can walk about easily and only become distressed on exertion, whereas others can hardly walk at all owing to dyspnœa and pain of the type mentioned. In general the younger the individual the less the distress. In older people the disability varies with the capacity to expand the thorax—in other words, it is proportional to the amount of senile fixation of the bony framework.

3. *Posture.*—When in bed patients with unilateral phrenic paralysis prefer to be slightly propped up or to lie on the affected side. Even those who are able to walk without undue distress become uncomfortable when lying on the sound side. It can be shown by X ray examination that when the body is in the lateral position it is normal for the lower half of the diaphragm to become relatively quiescent, throwing extra work on the upper half; hence when the latter is paralysed distress is bound to be felt. The work of Adams and Pillsbury[16] supports this view.

Summary and Conclusions.

A syndrome recognisable clinically has been described the signs of which are due partly to defective action of one-half of the diaphragm, and partly to the resultant incomplete expansion of the lungs. In this series of cases the causal factor has been pressure on the phrenic nerve of one side. This syndrome is important as assisting in the diagnosis and localisation of intra-thoracic lesions. Too much stress cannot be laid on the importance of making the physical examination during quiet and natural breathing.

I have to thank my colleagues for allowing me to investigate the cases under their care, and Prof. Frazer of St. Bartholomew's Hospital for a similar courtesy in one instance. I am also greatly indebted to Dr. Wiltshire for his help and criticism of this paper, to Dr. Greenfield and Dr. da Fano for advice on the microscopic technique, and to Mr. S. Mitchell for the preparation of the sections.

(Continued at foot of next column.)

NOTE ON A CASE OF PARENTERIC FEVER CAUSED BY *B. COLUMBENSIS* CASTELLANI.

BY H. N. C. VAN GEYZEL KELAART, M.R.C.S. ENG.,
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FOR some years it has been noted by various observers, and principally by Castellani, Chalmers, Balfour, and Archibald, that in tropical and subtropical zones, and occasionally also in temperate zones, there occur a comparatively large number of cases clinically somewhat resembling typhoid or paratyphoid, in which, however, the bacteriological examinations for typhoid and paratyphoid are constantly negative, while other organisms are found which are in all probability the true ætiological agents.

Castellani has introduced the term *parenteric* to indicate these cases, and he has suggested the following classification of intestinal fevers: 1. Fevers due to *B. typhosus* Eberth, *B. paratyphosus A* Schottmüller, *B. paratyphosus B* Schottmüller, *B. paratyphosus C* Hirshfield = enteric. 2. Fevers due to intestinal bacilli which differ from typhoid and paratyphoid bacilli = parenteric. To cover both groups of fevers, enteric and parenteric, he introduced the term "enteroid" (enteroidea).

The best known types of parenteric are *B. asiaticus parenteric* and *B. columbensis parenteric*, both first described by Castellani. The former has recently been thoroughly investigated in Egypt by Khaled.

Clinical Record.

It may be of interest to put on record a case of *B. columbensis parenteric* which I had the opportunity of investigating at the Italian Hospital, London, a few months ago:—

Miss N. B., aged 26, sister-in-charge of a medical ward. Nothing important in her past medical history; never had typhoid. Has been residing in London since March, 1923; always in good health. At the beginning of May, 1924, began to feel somewhat tired, complained of headache; had small nasal hæmorrhage. From the 9th on she took her temperature daily, morning and evening; on the 9th in the evening it was 100°, on the 14th, 102°. The temperature in the early morning varied according to her statements from 99° to 100°. She continued working until the 15th, when, feeling very bad, she reported sick to the matron, and I saw

(Continued from previous column.)

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Table Showing Biochemical Characters of B. Columbensis and Some Other Pathogenic Intestinal Germs.

—	Bacteria.	Motility.	Gram.	Gelatin.	Serum.	Litmus milk.	Lactose.	Saccharose.	Dulcite.	Mannite.	Glucose.	Maltose.	Dextrin.	Raffinose.	Arabinose.	Adonite.	Inulin.	Sorbite.	Galactose.	Lævulose.	Inosite.	Sallcin.	Amygdalin.	Isodulcite.	Erythrite.	Glycerine.	Indol.	Voges-Prosk.	Broth.
1	*B. columbensis* Castellani (1905)	+	0	0	0	A Ve, Alk, D, or A	0	0	A, G	A, G	A, G	A, G	0	0	A, G	0	0	A, G	A, G	A, G	0	A, G	0	A, G	0	A, G	+	—	Gt
2	*B. asiaticus* Castellani (1905)	0	0	0	0	A, Alk	0	A, G	0	A, G	A, G	A, G	A, G	A, G	A, G	0	0	A, G	A, G	A, G	0	0	0	A, G	0	A, G	+, S	0	Gt
3	*B. asiaticus mobilis* Castellani (1914)	+	0	0	0	A, Alk	0	A, G	0	A, G	A, G	A, G	A, G	A, G	A, G	0	0	A, G	A, G	A, G	0	0	0	A, G	0	A, G	+, S	0	Gt
4	*B. kendiensis* Castellani (1913)	+	0	0	0	A S, D, Alk	0	A S	0	A	A	0	0	0	0	A	0	0	A	A	A	A	0	A	A	A	0	0	Gt
5	*B. talaensis* Castellani (1909)	+	0	0	0	Alk, D	0	A	0	0	A	0	0	0	0	0	0	0	0	A	A	A	0	0	0	A	+	0	Gt
6	*B. pritnleri* Castellani	+	0	0	0	A	0	0	0	0	A	A	A	0	0	0	A	0	A	A	A	A	0	0	0	0	0	—	Gt
7	*B. paratyphosus A* Schottmüller	+	0	0	0	A	0	0	A, G	A, G	A, G	A, G	A, G	0	A, G	0	0	A, G	A, G	A, G	0	0	0	A, G	0	0 or A S	0	0	Gt
8	*B. paratyphosus B* Schottmüller	+	0	0	0	A, Alk	0	0	A, G	A, G	A, G	A, G	A, G	0	A, G	0	0	A, G	A, G	A, G	A, G	0	0	A, G	0	0	0	0	Gt
9	*B. typhosus* Eberth	+	0	0	0	A	0	0	0	A	A	A	A	A S	0	0	0	A	A	A	0	0	0	0	0	A S	0	0	Gt
10	*B. coli* Castellani (1909)	+	0	0	0	A, Alk	0	0	A, G	A	A, G	A, G	A, G	A, G	A, G	0	0	A, G	A, G	A, G	A, G	0	0	A	0	0	0	—	Gt

Abbreviations.—A = acid; G = Gas; C = Clot; D = decolourised; Alk = Alkaline; S = slight; A, Alk = Acid then alkaline; Gt = general turbidity; Ve = very slight; 0 = negative result—viz., neither acid nor clot in milk, neither acid nor gas in sugar media, non-production of indol, non-liquefaction of gelatin or serum as the case may be; + = positive result.

Remarks.—Certain strains of *B. columbensis*, serologically typical, ferment dextrin; certain strains of *B. asiaticus*, serologically typical, have no action on dextrin, raffinose, and sorbite.

her. She was feeling very tired and complained of severe headache and slight abdominal discomfort and constipation. Tongue very coated; nothing worth noting at the examination of the chest; abdomen somewhat distended, no roseola; spleen and liver not palpable; no albumin or sugar in the urine. She was put on liquid diet and so-called intestinal disinfectants. The temperature, at first subcontinuous then tending to be intermittent, lasted two weeks more (probably three weeks in all). No complications arose.

Bacteriological Examinations.—The blood was examined by serological tests during the fever and after defervescence. The agglutination was always completely negative for *B. typhosus*, *B. paratyphosus A*, *B. paratyphosus B*, and *B. paratyphosus C*, also for *M. melitensis* and *M. paramelitensis*, also for *B. asiaticus* (variety *mobilis* and variety *immobilis*); the microscopical examination of films for malaria was negative. The blood agglutinated *B. columbensis* up to a dilution of 1:160. Further agglutination tests showed that the agglutination gradually decreased until, on Sept. 14th, it was 1:40.

Stools.—No typhoid or paratyphoid bacilli found; a bacillus was grown with all the characters of *B. columbensis*. It was agglutinated by the patient's blood in slightly higher dilutions than the laboratory strains of *B. columbensis*; it was not agglutinated by typhoid or paratyphoid sera. Highly agglutinated, more than 1:600, by *B. columbensis* serum kindly supplied by Dr. Mackenzie Douglas.

Remarks on the Strain of B. columbensis Isolated.—The principal characters of this strain isolated from the stools are as follows: It is a motile, Gram-negative bacillus easily stained by the usual aniline dyes. Lactose is not fermented; this is interesting in view of the statement made by Castellani and others that certain strains of this bacillus when recently isolated have an inconstant action on lactose, generally not fermenting it, but occasionally doing so and producing at times a slight amount of gas. So far my strain has been always negative as regards lactose. The action of my strain on other carbohydrates is as follows:—

Glucose: acid and gas. Maltose: acid and gas. Saccharose: no change. Dulcite: no change. Arabinose: acid and gas. Glycerine: acid and gas. Lævulose: acid and gas. Galactose: acid and gas. Raffinose: no change. Mannite: no change. Inosite: no change. Dextrine: no change.

In litmus milk there is a slight acidity at first, then the medium becomes slightly alkaline. My strain produced indol, and the Voges-Prosk reaction was negative. Gelatin and serum did not become liquefied. In broth and peptone water it produced a general turbidity. Serologically the strain isolated is identical with the laboratory strains; it is not agglutinated by typhoid and paratyphoid sera, it is agglutinated in high dilution by columbensis serum.

The biochemical characters of *B. columbensis* are recorded in the table, together with the biochemical characters of a few other intestinal bacilli. A complete table of intestinal bacilli may be found in Castellani and Chalmers's "Manual of Tropical Medicine," p. 944.

Résumé and Conclusions.

The patient developed a fever which lasted approximately three weeks. All the serological reactions for typhoid and paratyphoid were constantly negative as well as the bacteriological examination of the stools for the same germs. Instead the blood showed marked agglutination (1:160) for *B. columbensis*, which has gradually decreased since the fever ceased. From the stools a bacillus was grown with the characteristics of *B. columbensis*; it was well agglutinated by the patient's blood in slightly higher dilution than the laboratory strains.

In my opinion the case I have briefly described is in all probability a case of "parenteric fever" due to *B. columbensis* Castellani. This type of parenteric is also known as "febris columbensis."

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OBSERVATIONS UPON THE EFFECT OF AN ANTISERUM UPON CANCER CELLS IN VITRO.

BY THOMAS LUMSDEN, M.D. ABERD.

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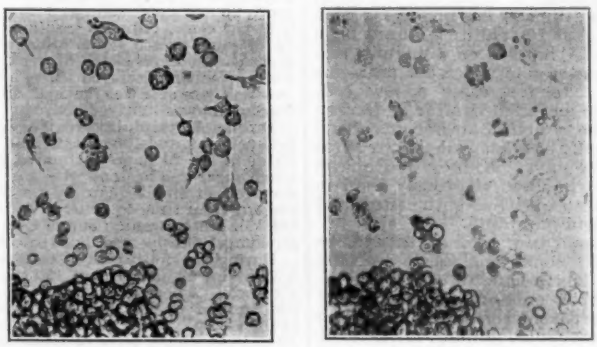
IN 1906 Ehrlich[1] observed that a mouse tumour inoculated into a rat survived and increased in size for some days and then died out. Thereafter the rat was immune to the tumour concerned. This observation has been confirmed by many workers. The serum of a rat thus immunised has no appreciable curative effect when injected into a mouse bearing the tumour. Using the method of tissue culture, previously described,[2] I found that the mouse cancer cells may retain their activity in such a serum for a month or more, which indicates that the latter must contain few if any antibodies. It seemed possible, however, that by repeating the inoculations into the rat an effective amount of antibodies might be produced. I was encouraged to pursue this idea by the fact observed by Ledingham[3] in 1914, that a potent anti-platelet serum was produced in the rabbit only after repeated inoculations of guinea-pig blood platelets. Several interesting papers on immunity to cancer and reviews of the literature up to 1912 are to be found in the third and fifth scientific reports of the Imperial Cancer Research Laboratory. Since that date no fresh facts of outstanding importance have been forthcoming on this subject.

Method.—A mouse mammary carcinoma (M 63 of the Imperial Cancer Research Laboratory) was dissected out carefully, with rigid aseptic precautions, washed in normal saline, and finely divided up with scissors. Of this 0·1 c.cm. was inoculated subcutaneously into two rats. Tumours appeared and grew for 10–12 days and were then reabsorbed. Thereafter, 1 c.cm. of similar tumour material was injected into the peritoneal cavity of each rat, weekly for eight weeks. Seven days after the last injection in Rat 1, and three days after in Rat 2, the serum of the rats was collected and stored in sealed capillary tubes made of "resistance" glass. An anti-rat-cancer serum was similarly made from two rabbits. Cancer cells, various normal tissues from young animals, and both of these together were then cultivated in the antisera, with controls in normal rat or rabbit serum.

Experimental Observations.

1. In the serum of Rabbit 1 six cultures of rat cancer were set up with controls in normal rabbit serum. All the controls showed the usual amount of migration. In the immunised rabbit serum a precipitate appeared and in every instance the cancer cells died within 24 hours. No migration occurred.

FIG. 1.

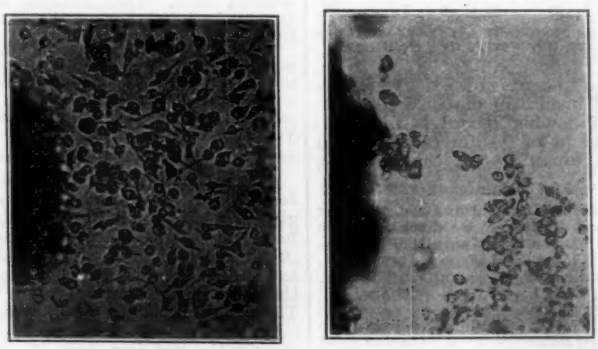


A. Cells migrating actively from fragment of mouse cancer growing in normal rat serum.
B. The same six hours after being treated with antiserum from Rat 1. Each cell now consists of structureless protoplasm surrounded by a ring of fatty globules.

2. In the serum of Rat 1 four cultures of cancer (M 63) were set up, controlled by six fragments of the same tumour in normal rat serum. In the former precipitation occurred in the serum and death of the tissue rapidly took place, as evidenced by complete absence of migration, and by fatty degeneration of the original fragment. All the controls grew vigorously; of these two were selected and were re-fed on the third day (when showing very active migration) with the serum of the immunised Rat 1. The migrating cells were found to be completely lysed within six hours. On the fifth day two other controls were similarly treated with a like result. (Figs. 1 and 2.)

3. In order to determine whether the lethal factor in this serum was anti-mouse or anti-cancer bodies, a series of 16 cultures were set up as follows: In the serum of Rat 1, two cultures of cancer alone, one of cancer and heart symbiotically, one of cancer and kidney, one of cancer and spleen; similar tissues were set up in normal rat serum as controls. Cultures of mouse heart, kidney, and spleen were also set up alone in each serum. The pH of the serum was in all cases roughly 7·6. All the cancer fragments in the immunised rat's serum were dead within 24 hours, whereas the normal young mouse tissues survived. Thus the heart muscle continued to beat for several days and to grow alongside the dead fragment of cancer. In the controls in normal rat serum all the normal tissues grew and the cancer fragments showed very active migration. After some days certain of the control cultures in which both cancer and heart

FIG. 2.



C. Mouse cancer cells migrating regularly over the cover-glass.
D. The same cells "clumped" three hours after application of antiserum from Rat 2. When stained such cells already show chromatolysis.

[1] Ehrlich: Arbeit. a. d. Kgl. Inst. f. Exp. Therapie, 1906.
[2] Lumsden: THE LANCET, 1924, ii., 65.
[3] Ledingham: THE LANCET, 1914, i., 1673.

muscle were active, were fed with the immunised rat serum—photographs being taken before and after. In every instance the migrating cancer cells were completely lysed; the normal tissue continued to grow.

4. With the serum of immunised Rat 2 further series of cultures similar to those mentioned above were set up, with entirely confirmatory results. The normal tissues used were young mouse kidney, salivary gland, and heart. This serum (Rat 2) did not, however, show a precipitate, but some (? lipoid) substance separated out in a fine scum at the interface between the drop of serum and the air in every case where mouse cancer was present. This did not occur in the controls. The interface appeared wrinkled and not unlike a certain variety of non-transparent "frosted" glass.

Remarks and Conclusions.

The number of experiments is small and the most appropriate control tissue (breast) has not so far been used, but the results in over 100 cultures in sera from two rats and two rabbits have been constant and positive. No instance was seen in which the antigenic tumour cells survived. In ten cases a few cells migrated out, but these succumbed after re-feeding with the antiserum. In the symbiotic antiserum culture heart muscle grew normally and beat for two or three days, in one case for six days. Kidney and spleen survived but grew somewhat less vigorously than in normal rat serum. In all the controls both cancer and normal tissue survived and grew well.

If the above experiments can, as I anticipate, be repeated consistently, the conclusion seems justified that antibodies more or less specific to cancer can be produced by its repeated inoculation into an animal of another species. Apart from this serum, all other agencies I have tried (heat, cold, radium, ultra-violet rays, bacterial infection) cause the death of normal tissues in vitro before that of cancer cells. On account of the dilution involved, and probably for other reasons, results comparable with those referred to above are not likely to be readily obtained in vivo, if, indeed, they can on these lines be obtained at all.

Further experiments in vitro and in vivo are in prospect both with animal and human cancer.

I am indebted to Prof. C. J. Martin, F.R.S., director of the Lister Institute, for putting a laboratory there at my disposal while carrying out the above research.

NOTES ON AN UNUSUAL CASE OF DIABETIC COMA.

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A SUFFICIENT number of records now exist to render the life-sparing effect of insulin in diabetic coma an established fact. The following record is made on account of the large amount of insulin required and the length of time that elapsed before consciousness returned.

History of Case.

A married woman, aged 35, was treated in June, 1923, for severe diabetes of nine years' duration. On discharge from supervision a diet was being taken containing 1850 calories made up of protein 120 g., fat 110 g., and carbohydrate 110 g., with two daily doses of insulin each of 25 units. The diet was so arranged that a large meal was given at 9 A.M. and again at 5 P.M., with two small meals containing very little carbohydrate at 1 P.M. and 9 P.M. In this way two daily doses of insulin sufficed. This arrangement maintained good health, fair exercise tolerance, and no great gain in weight, but permitted fairly frequent glycosuria. During August and September, 1924, large quantities of acetone appeared in the urine, but for this no medical advice was sought. The patient had been taught to use the nitroprusside test.

On the morning of Sept. 29th, 1924, the patient awakened to find that breathing was difficult and occasioned great pain in the right lower chest and right shoulder. An intense degree of air-hunger was later established which led to coma by 5 P.M. The urine was loaded with sugar and acetone, the blood-sugar was 0·4 per cent., and the patient was given glucose, 50 g., and 40 units of insulin.

The following notes give a very brief indication of subsequent events with blood-sugar readings at fairly frequent intervals. It will be seen that consciousness was not fully regained until midday of Oct. 5th, after the administration of 1100 units of insulin, and that contemporaneously the acetone became reduced to a mere trace.

Sept. 29th, first day: 9 A.M., very short of breath, pain under right lower ribs and in right shoulder. 12 noon, severe pain all over chest; given inj. morph. hypod., gr. ¼. Still short of breath. 4 P.M., typical air-hunger; conscious, but very ill and in great pain. Blood-sugar (b.s.), 0·4 per cent.; given 50 g. glucose and 40 units of insulin and removed from home. 7, b.s. 0·52 per cent., comatose, 20 units of insulin. 10.30, b.s. 0·52 per cent. 12 midnight, 40 units insulin.

Second day: 3.40 A.M., b.s. 0·52 per cent., 40 units insulin. 6.30, b.s. 0·52 per cent., 20 units insulin. 9, b.s. 0·52 per cent., insulin 40 units, air-hunger distinctly less. 12 noon, b.s. 0·52 per cent., 40 units insulin and 25 g. of glucose given. 3 P.M., b.s. 0·52 per cent., 40 units of insulin. 6, b.s. 0·52 per cent., 20 units of insulin and 25 g. of glucose given. 8, b.s. 0·52 per cent., 60 units insulin. 10.45, b.s. 0·52 per cent. In 24 hours passed 44 oz. urine, containing much sugar and acetone. Food consisted of weak bovril, brandy, and soda-water, vomiting occurred three times, coma was unchanged, but the air-hunger was much diminished. Volume of ingested fluid unknown.

During the third day the blood-sugar varied from 0·27 to 0·45 per cent. and 190 units insulin were given in seven doses. Urine in the 24 hours amounted to only 18 oz., containing much sugar and acetone with a trace of albumin. Vomiting occurred in small quantity ten times, and hiccough was present from time to time. Food consisted of weak bovril, chicken broth, brandy, one egg, and much soda-water. The air-hunger disappeared, but the coma remained unchanged.

During the fourth day the blood-sugar varied between 0·31 and 0·52 per cent.; 120 units insulin were given in six doses. Food as on previous day till 1 P.M., when it was limited to one part milk and two parts soda-water, given freely. Coma rather deeper. Urinary output only 10 oz., containing trace of albumin, with sugar and acetone still in large quantity. There was no vomiting, but the patient was extremely restless.

Fifth day: 2 A.M., b.s. 0·48 per cent., insulin 60 units. 5.30, b.s. 0·28 per cent., insulin 40 units. 7.45, b.s. 0·15 per cent., insulin 12 units. 12 noon, b.s. 0·12 per cent., insulin 12 units. 1 P.M., b.s. 0·09 per cent., slight sweating. 5.30, b.s. 0·16 per cent. 9.30, b.s. 0·26 per cent., insulin 10 units. The patient was incontinent the whole day and very restless during the first half, although much quieter later. The diet consisted of one part milk and two parts soda-water, taken freely. No return of consciousness accompanied the fall in blood-sugar; in fact, the patient seemed a good deal worse, and the pulse flagged in volume somewhat.

During the sixth day the blood-sugar varied from 0·44 to 0·48 per cent., and 215 units insulin were given in eight doses. Incontinence disappeared early in the day, the volume of urine passed was 93 oz., sugar being present but acetone much reduced. The patient was much less restless and only vomited once. Consciousness was partly re-established during the latter half of the day, and a fair response to simple questions was obtained.

During the seventh day the blood-sugar ranged between 0·16 and 0·36 per cent., and 150 units of insulin were given in seven doses. She became fully conscious at 10.15 A.M. Up till now 1170 units of insulin had been given. Urine passed 58 oz., containing sugar and some acetone. Vomiting only occurred once.

Discussion.

Several points of interest arise from this clinical record. In several previous cases glucose had been given, in spite of a high blood-sugar, because it had been suggested that insulin did not act as well against sugar derived from protein, and possibly from fat, as it did against glucose directly given,[1] and that therefore delay occurred in the removal of the ketosis. The subsequent findings in this case would go far to negative such a view, since no carbohydrate was given during the last four days of the coma. And further, Nash has shown that injection of insulin into phloridzinised dogs reduced the blood-sugar to the level of hypoglycæmic coma, the sugar in such dogs coming from the high protein wastage known to exist.[2]

The most striking fact is perhaps the very long delay in the recovery from coma. The air-hunger was materially reduced in severity after 12 hours of treatment, but persisted in easily recognisable form for 36 hours. After its disappearance coma still remained and showed no signs of reduction in degree. Sodium

bicarbonate was given by mouth throughout, but never in any larger dose than a drachm at a time. It is suggested that a factor which was overlooked in the treatment is possibly a very potent one—namely, the available phosphates.

J. B. S. Haldane has shown[3] that acidosis may be induced by giving large doses of ammonium chloride by mouth, and that the acidosis so produced may be prevented or relieved by the administration of neutral sodium phosphate, which enables the kidney to secrete much more acid.

It is possible that had phosphates been given freely, a much more rapid recovery of consciousness would have taken place. Some support to such a view is given by the fact that after recovery the tongue remained for several days thickly coated with a brown fur, which did not clean in spite of much bicarbonate and constant buccal toilette; it, however, cleaned completely in 24 hours on the addition of 15-gr. doses of sodium phosphate to the diet. The fall of the blood-sugar to below the level of 0·1 per cent. might also be explained on this basis, for recovery of consciousness did not then take place.

The great reduction in urinary output on the third and fourth days in spite of a reasonable fluid intake and no marked sweating or diarrhœa is also difficult to explain. It certainly was not due to circulatory failure, for the heart throughout the attack gave no cause for great anxiety and the pulse remained of good volume and tension. During the period of limited urinary output a faint trace of albumin was found, but this disappeared immediately the secretion rose in volume and has not been found since. The bearing of diminished urine upon the blood-sugar must not be overlooked, for it follows that the sugar wasted by passage through the kidneys will not require the artificial aid of insulin for its combustion, and hence that if the sugar secretion via the kidneys is reduced a larger amount of insulin will be needed, it being known that insulin is capable of burning somewhere between one and two grammes of sugar per unit.[4]

The giving of food during coma is always a difficult problem. In this case the nutritive value of the food given was extremely low, but recovery took place when half a pint of milk was given every four hours and the insulin pressed until the blood-sugar was reduced to within normal limits. This would suggest that insulin acts best when the relative proportion of proteins, fats, and carbohydrates approaches most nearly to the normal, for it is surely tenable that milk would most likely represent such a combination.

There would seem to be little doubt but that sugar was produced in very large quantity from protein during the several days when no carbohydrate whatever was given, and during which the blood-sugar maintained its high level in spite of large and frequent insulin doses. And it would further seem that the administration of a properly-constituted diet with the insulin allowed the vicious metabolic circle to be broken.

It is remarkable that although coma developed to the degree of incontinence, yet throughout the patient took fluids freely and easily.

Conclusions.

The conclusions submitted for consideration in this case are as follows: (1) That the failure of insulin to maintain good health in a diabetic patient is to be attributed to bad management and not to any ineffectiveness of the drug; (2) that recovery from prolonged coma is still possible by somewhat heroic dosage with insulin; (3) that insufficient treatment may keep the patient alive without overcoming the acidosis sufficiently to allow of consciousness being regained; (4) that a probable factor in delayed return to consciousness in some cases is the amount of available phosphate; (5) that insulin is effective alike against glucose administered and the sugar produced by protein breakdown.

References.—1. MacLean, H.: Modern Methods in Diagnosis and Treatment of Diabetes, p. 159. 2. Nash, T. P.: Jour. Biolog. Chem., December, 1923. 3. Haldane, J. B. S.: Jour. Physiol., 1921, p. 265. 4. Ringer, S.: Jour. Biolog. Chem., December, 1923.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

NON-SPECIFIC DISTURBANCES OF HEALTH DUE TO VITAMIN DEFICIENCY.

ON Feb. 16th this Society held a general debate on this subject. The chair was occupied by Sir STCLAIR THOMSON, the President.

Dr. LEONARD WILLIAMS, in opening the discussion, pleaded for an extension of the meaning of the word "vitamin" far beyond the limits of the three accessory food factors to which it was usually applied, for it was impossible to place a vitamin in a water-tight compartment, and its fellows must be sought outside the orthodox trinity of fat-soluble A, water-soluble B, and anti-scorbutic C.

Supplementary Substances.

The first of the supplementary substances, he said, were the mineral salts. Dr. J. Boyd Orr had pointed out that the mineral might be present in a combination from which it could not be easily dissociated in the alimentary canal. Therefore the diet might suffice in amount, but owing to difficulty of assimilation, only a small proportion might be utilised. Orr showed that in the case of most minerals, both absorption from the intestine and excretion by the kidney were influenced by the amounts of other minerals present. Excess of magnesium had been shown by Hart and Steenbock to interfere with the utilisation of calcium, while phosphorus and calcium were mutually dependent on each other for utilisation; as also were calcium and iron.

Dr. Williams asked where the balance was to be obtained, except in Nature's laboratory. There were also the catalysts, which effected chemical changes without themselves taking part in those changes or being altered by them. Bayliss's work seemed to show that catalysts as found in Nature were essential to the proper utilisation not only of the mineral salts, but also of the proteins, fats, and carbohydrates. And in this category it was necessary to include the enzymes, which Bayliss defined as catalysts produced by living organisms. The enzymes were produced by friendly bacteria. The great influence of chlorophyll must also be taken into account, upon which all life depended, and which was manufactured by the vegetable kingdom alone. Speaking of the value of sunshine, he referred to the statement of Prof. Arthur Thomson that if rats kept on a deficient diet and not fortified by ultra-violet light were fed with the flesh of other rats which had been treated with ultra-violet rays, they throve and escaped rickets. Moreover, Steenbock and Black had shown that if a food ration known to be deficient in rickets-preventing vitamin was exposed to ultra-violet light before being fed to the rats, it became adequate and sufficient. Turning to electricity, he said mineral salts were electrolytes; colloids had an electrical discharge, and enzymes were colloids.

It was important, he said, to recognise that each of the substances or agencies mentioned—mineral salts, catalysts, enzymes, chlorophyll, violet rays, and electricity—was either destroyed by heat or so altered as no longer to be recognisable as Nature's product, and so ceased to operate as our reinforcements, and might even become our enemies. He therefore declared that all disease, whether microbic or metabolic, was a function of cookery and concentration, and he urged the essential representation in food of raw fruits and raw vegetables.

Disturbances of the Gastro-intestinal Tract.

Lieut.-Col. R. MCCARRISON dealt with the subject of the disturbances on the gastro-intestinal tract due to vitamin deficiency. These disorders included

irregular action of the bowels, infection of the tract, chronic digestive disturbances with impaired absorption and assimilation of food, gastro-intestinal stasis, mucous disease in children, and colitis in adults. Vitamin deficiency of lesser degree continued for long periods might cause effects similar to those of greater degrees of this deficiency for a shorter time. There was found to be a great variation in individual idiosyncrasy among animals of the same species and age to chronic vitamin starvation, and in the animals used for experimentation on this subject there was a variation of results according to the pathogenic flora of their intestines. In general, these animal experiments were fairly applicable to man. The effects of vitamin deficiency were enhanced by want of balance of the food in respect to starch, fats, suitable protein or mineral elements, and he had used largely in his investigations wild monkeys which had been living their natural life in the Madras jungles. He related the careful experiments he had conducted, and said that the first effect of food deficient in vitamins was to render the intestinal tract—especially certain parts of it—susceptible to invasion by bacterial or protozoal agents. In due time the monkeys died, or were killed when about to die, and he found the following gross anatomical lesions: (1) enlargement of the mesenteric glands; (2) dilatation of the stomach; (3) congestion of the gastro-intestinal tract, with ecchymoses scattered over its peritoneal surface, most commonly in the colon; (4) ballooning of various parts of the tract; (5) marked thinning of the muscular walls of the colon, and partial disappearance of its longitudinal muscular bands. Various pathological changes were noted on opening the tract, including congestion and ecchymoses of the stomach, especially round the pylorus, shallow ulcers, papillary downgrowths of epithelium suggestive of commencing carcinoma in the pyloric region. In the colon there were varying degrees of colitis, sometimes involving the whole viscus. Colitis was the most marked and one of the most constant of the morbid anatomical changes present. He also found a number of histological changes in the tract, such as congestion and hæmorrhage, atrophy of the muscular coats of the bowel, degenerative changes in the plexus of Auerbach, atrophic, necrotic, and inflammatory changes in the mucous membrane of the entire tract, but especially in the colon, bacterial invasion of the bowel walls, opening of portals of entry for bacteria into the blood-stream, and pronounced atrophy of the lymphoid elements of the intestinal mucosa. Rarely were all these changes present in all the deficiently fed animals, but most of them were. Usually they were more pronounced in the animals whose deficiency was in both A- and B-vitamins. Dr. Cramer had found that the digestion of fats was less complete and rapid in the absence of vitamins from the food, and that the vitamins, especially B, had a definitely stimulant action on the processes of intestinal digestion and absorption. Dr. Gross, using synthetic diets deficient in vitamin B, had shown, in vivo and in vitro, that it resulted in definite impairment of the motor functions of the intestinal tract; and Pappenheimer and Larimore showed that gastric lesions occurred in 55 per cent. of rats fed on synthetic diets in which the only deficiency was vitamin A. And they found that the addition of cod-liver oil afforded complete protection against those gastric lesions. Those authors commented on the fact that the gastric lesions resulting in their rats from food deficiency bore a remarkably close resemblance to those described by Fibiger as resulting from infestation by the nematode *Spiroptera neoplastica* which was present in their rats. The only reference to the diet of Fibiger's rats was the statement that they were fed solely on white bread. Col. McCarrison said he had noted in pigeons fed on a vitamin-deficient diet a tendency to favour the action of an invisible virus capable of causing epithelial new growth and of the disease known as epithelioma contagiosum. There was, Pappenheimer and Larimore pointed out, a similarity of the hyperplasia produced by this virus to the papillary outgrowths and downgrowths of epithelium figured in some of their gastric lesions in rats; this was comparable to the downgrowths of epithelium, resembling commencing carcinomatous change, encountered in one of the speaker's monkeys which he experimented upon.

Col. McCarrison showed on the screen some very instructive slides to demonstrate the various lesions produced by the vitamin deficient foods which he had described.

New Specific Impairments in Health from this Cause.

Dr. W. CRAMER paid a tribute to the pioneer work of Col. R. McCarrison on the aspect of the vitamin problem under discussion. He was in agreement with most of Col. McCarrison's conclusions. Minor differences in their observations could be attributed to the fact that the speaker had worked mainly with single vitamin deficiencies operating on a synthetic diet with properly balanced inorganic salts, while Col. McCarrison had observed the effects of the deficiency of more than one vitamin in natural diets where other factors such as proteins of low biological value and a disproportion of inorganic salts were additional factors. Dr. Cramer protested against the extension of the vitamin conception as unjustified; he pleaded for a restriction of the term vitamin to the three food accessory factors, A, B, and C. Contrary to what had been stated light could not replace any of the vitamins. Several observers, including the speaker, had succeeded in rearing animals in the absence of light, but nobody had as yet been able to rear animals in the absence of vitamins no matter how much light was applied. All that light could do in those circumstances was to delay slightly the fatal issue.

Dr. Cramer pointed out that there was no justification for any fundamental distinction between specific and non-specific impairments of health due to vitamin deficiencies, as both were manifestations of specific pathological changes. The so-called specific deficiency diseases were merely the last links in the chain of events of which, he said, the non-specific impairments were the earlier ones. When vitamins were withheld from the diet, the health of the organism at once declined. There was loss of appetite, constipation, a gradual fall in the body temperature, a diminished nitrogen retention, an impaired absorption of food, and a progressive atrophy of the lymphoid tissue; and all those disturbances were specifically remedied by the administration of vitamin B. The latter vitamin, therefore, had a drug-like specific, stimulating action on the functions of the digestive tract, and he contended that a complete analogy existed between its action and the action of the hormones. In the case of both these substances the absence of the specific stimulus led to atrophic changes. Dr. Cramer said that a striking feature of mammals suffering from vitamin-B deficiency, even in its most advanced stages, was the absence of spontaneous infections, in spite of the condition in the animal of complete marasmus. He drew a particular distinction between the resistance of the organism to spontaneous infections and the resistance to experimental infections produced by injections of bacteria under the skin. The latter was said to be diminished in the case of the animal being fed on food deficient in vitamin B.

Vitamin-A Deficiency.

Animals suffering from vitamin-A deficiency presented the precise reverse condition, for they always developed spontaneous infections. These infections were observed to commence in the mucous membranes of the intestinal and the respiratory tracts, and in that of the eye. They were due to the weakening of the local defences of these tissues, represented by the mucus and the tears. But the general humoral defences of these animals remained unimpaired until long after the local infections were

established. The same diminished resistance to local infections had been observed in children, in whom xerophthalmia was always accompanied—sometimes preceded—by an infection, usually of the lungs. Therefore when in badly nourished children general infections occurred—e.g. pneumonia or enteritis—they must be regarded as specific deficiency diseases just as much as was the xerophthalmia. Dr. Cramer reminded the meeting of the condition of "vitamin under-feeding" to which he drew attention in 1922, in cases in which the intake of vitamins, though sufficient to enable the animals to grow and reproduce themselves, was not productive of full health. He also referred to the harmful effect of vitamin under-feeding in pregnancy, both to the mother and her offspring during lactation. Webster made an experiment in the vitamin under-feeding of mice, in which an intestinal infection with mouse typhoid was increased from a mortality of 20 per cent. to one of 100 per cent. It had been widely asserted, he said, that a civilised community living on a freely-chosen mixed diet was in no danger of suffering from a deficient vitamin intake, but Denmark furnished a refutation of this idea, as shown by the work of Blegvad and Widmark. Owing to economic conditions, the people of Denmark had suffered from an extensive vitamin deficiency, as indicated by the decreasing consumption of milk fat, and the increasing consumption of margarine. Similar conditions existed in this country, for the poorer classes, owing to their consumption of margarine, which was free of vitamin A, and their consumption of white bread, which did not contain vitamin B, were cut off from the main natural supplies of vitamins. It was not recognised that this steady deprivation resulted in a lowered standard of health, and the failure to recognise the importance of the matter was added to by the statement of leading authorities that the supply of vitamins was sure to be adequate if there were no specific deficiency diseases. The organism, especially in its young stage, required for its full functional development an abundant supply of vitamins, and restrictions of this intake would assuredly result in manifold disturbances of function.

Bone-marrow Changes.

Dr. G. M. FINDLAY spoke specially of the bone-marrow changes found in association with vitamin-deficient feeding. He said that the most important of the non-specific disturbances of health due to this deficiency was the increased liability to bacterial infection. In studying the reasons for this break-down in the defence mechanisms, it was essential to investigate the condition of the leucoblastic tissues, especially those concerned with the formation of polymorphonuclear leucocytes. In animals fed on synthetic diets deficient in vitamin A, it was, he said, rare to find lesions in the leucoblastic bone-marrow, though in a very few adult animals which were maintained for many months on a diet deficient in vitamin A, an aplastic condition of the bone-marrow was observed. Associated with this was the fact that there was no reduction in the number of leucocytes in the blood-stream in this form of deficiency. In fact, after the onset of keratomalacia it was not uncommon to meet with a polymorphonuclear leucocytosis, and there was, at the same time, a fall in the bactericidal power of the blood, and this diminution of the function was present in all acute infections. Thus the infections associated with a deficiency of vitamin A in the diet were solely due to a local breakdown at the sites of infection, e.g., the conjunctiva, and the lining of the respiratory and intestinal tracts. Fleming had found, in the secretion of tears and of the respiratory mucous membrane, a substance—lysozyme—possessing a strongly lytic action on certain bacteria, and in rabbits with keratomalacia as a result of vitamin-A deficiency the lysozyme in the tears was greatly reduced. Indeed, in rats it was possible to prevent the onset of keratomalacia by washing the conjunctival sac with undiluted tears. Animals fed on diets wholly deficient in vitamin B showed numerous small hæmorrhages in the bone-marrow. When vitamin B was not entirely withheld there was gelatinous degeneration in the bone-marrow, the leucoblastic cells being reduced in number. While the opsonic power of the blood and the ability to form agglutinins, hæmolysins, bacteriolysins, immune body, and antitoxin remained unimpaired, it was usual to find a fall in the bactericidal power of the blood of animals fed on diets deficient in vitamin B, and this seemed to be correlated with the synchronous fall in body temperature. Animals with lowered temperature lost their capacity to resist bacterial infections. Referring to deficiency of vitamin C, Dr. Findlay said that guinea-pigs with acute scurvy showed many small hæmorrhages in the bone-marrow. In chronic scurvy in that animal, which did not show definite clinical symptoms, the bone-marrow underwent either a gelatinous degeneration or a fibrotic change, one not confined to the epiphyseal ends of the bones. In conclusion, Dr. Findlay said the increased susceptibility to infection occurring as a result of these vitamin deficiencies did not apply to all bacteria, as diets lacking in vitamin did not modify the course of experimental tuberculosis in either guinea-pigs or rabbits.

The discussion was adjourned.

SECTION OF SURGERY: SUBSECTION OF PROCTOLOGY.

A MEETING of this Subsection was held on Feb. 11th, Mr. F. SWINFORD EDWARDS, President, being in the chair.

The President opened a discussion on

FISTULÆ.

The subject he described as a specialty within a specialty. He referred to the paper he published in THE LANCET in 1918 (i., 673) and stated that he had nothing to add to, or retract from, what he had said then. Speaking of the genesis of the "horseshoe" fistula, which he believed to be much more frequently found than was generally supposed, Mr. Edwards said that the first step was the formation of an abscess in the mid-line dorsally between the two sphincters, due probably to an abrasion of the mucous membrane. Thence the suppurative process tracked above the ano-coccygeal ligament and the coccygeal fibres of the sphincter, which prevented the pus from coming to the surface in the mid-line and directed it to one or both sides, producing a semi or complete horseshoe fistula. The failure of operative interference he ascribed to (1) lack of a thorough acquaintance with the topography of the case and resulting incomplete opening out of the whole tract; (2) recurrence due to caries of the coccyx or tuber ischii, or the presence of a foreign body in the sinus; (3) infection with tuberculosis, though in his experience cases in which tuberculous caries was present healed very well, only two instances of callous wounds having occurred; he recommended the avoidance of operation when active tuberculosis was present in the lung, but the immediate opening of abscess cavities though less freely than in non-tuberculous cases; (4) the omission to remove overhanging margins of skin and mucous membrane; (5) injudicious after-treatment, painful or too abundant dressing, or too long confinement to bed. He stated that where the external opening lay behind a transverse line across the centre-point of the anal orifice the internal opening would be found as a depression between the two sphincters dorsally if the external orifice lay anterior to the mid-line the internal would usually (though not always) be found opposite. An anterior horseshoe fistula was unknown; where there were two or more external orifices in the perineum and the internal orifice lay to one side of the mid-line a branched fistula would be found. Mr. Edwards spoke of the danger of dividing the fibres of the external sphincter obliquely, healing being much more difficult in this case, and reminded operators

of the possibility of a deep sinus, running up at right angles to open into the bowel by a second internal orifice, joining the main fistula below in the mid-line dorsally. If such an extension were present the lower internal orifice might be felt between the sphincters as a depression; the upper as a small papilla. The high sinus should be laid open if its course was wholly submucous, but if such a treatment would involve cutting the internal sphincter it must be opened by a posterior incision from the lower part, producing a wide funnel-shaped cavity which was then freely curetted and packed. The application of silver nitrate solution or the solid cautery about a week later would generally give satisfactory results. In extensive cases the operation should be done in two parts, the first laying open all the side-tracts into the main posterior one, and the second, three to five weeks later, dividing the main dorsal sinus and the external sphincter. This was then a relatively small matter and usually resulted in a cure in two or three weeks more. The keystone of the operation for horseshoe fistula was the antero-posterior dorsal incision.

Discussion.

Sir C. GORDON-WATSON agreed as to the misleading impression usually conveyed by text-books in the matter of tuberculous fistulæ. Such cases were by no means hopeless. Many fistulæ might be tuberculous without the patient being tuberculous. In the latter case the fistula would do badly, but not in the former. Tuberculosis was no bar to a cure if the surgery and the after-treatment were correct. Referring to the President's statement that anterior "horseshoe" fistulæ were unknown, he thought that this indicated a difference in nomenclature, as the "branched" fistulæ, approximating very closely sometimes to a horseshoe shape, were undoubtedly found anteriorly. The high second internal opening was usually that of a submucous track only, but when not submucous the granulation was very slow. He had at times ventured to open them up into the bowel, and although incontinence had resulted it had not been permanent. He emphasised the importance of the two-stage operation, and ascribed failures to an incomplete opening up or else to an over-bold primary opening. He believed in the use of primary suture in suitable cases, and referred to a series of 17 cases he had shown before this Section, in which the results, combined with the use of flavine, bipp, or ether, had been excellent. Even if it failed, ground had not been lost, as granulation followed, and if it were successful the convalescence was much shortened. The results of using Finsen light to encourage the healing of very chronic cases had also been gratifying.

Mr. W. E. MILES said that the average surgeon did not realise that there were more types of fistula than one, and referred to the text-book classification, emphasising the point that the track of a fistula is an unobliterated abscess cavity, and that the four varieties distinguished should be the subcutaneous, the submucous, the ischio-rectal, and the horseshoe. The disposition of the fistula was entirely due to the process of dissemination by lymphatics. The difference of opinion as to whether the high internally-opening track could be opened with impunity was due only to a failure to differentiate between the track resulting from a submucous abscess and a pelvi-rectal one. What really mattered in the question of incontinence was the division of the point of convergence of levator ani with the sphincters. He urged the importance of making the surface area of the wound greater than the area of the two sides, otherwise the epithelial layer would be completed before the granulation from below had come up to meet it. Mr. Miles was in the habit of making three or four relief incisions at right angles to the opening incisions. He opposed the packing of the wound on the ground that this resulted in a surface depression, which, if it crossed the anal margin, resulted in a mechanical incontinence apart from any muscular damage.

Mr. ASLETT BALDWIN spoke of the value of ionisation, particularly for the case with high internal orifice. In one very severe case, where operation had been refused, the passage of a pure zinc electrode along a director, with ionisation on the track in pieces, had resulted in complete comfort for the patient. A callous surface, whether simple or tuberculous, could always be made to heal with zinc ionisation.

Mr. IVOR BACK suggested that the constant situation of the internal orifice between the two sphincters was due to a tearing of the anal papillæ by the passage of a constipated motion, producing a crack which subsequently became infected. He believed that the infection did not usually track diagonally across between the two sphincters, but that its common course was external to the external sphincter, pro-during an ischio-rectal abscess; the resulting fibrosis behind it would leave a mass of hard tissue which was what was cut by the surgeon when he believed he was cutting the external sphincter. In the cases where the fistula really seemed to lie between the two sphincters he suggested that it was the result of a long-standing process tracking round again from the ischio-rectal fossa. He classified fistulæ into (1) those with an internal opening; (2) those with a high internal opening, always secondary to one lying between the sphincters, and representing the upper pole of a submucous abscess working upwards—the treatment was to open up as for an ordinary fistula and then open the submucous tract into the rectum; (3) the pelvi-rectal abscess, which had nothing whatever to do with the rectum, but indicated tuberculosis of the viscera, ovary, or pelvic bones, and could not possibly be opened right up. He believed firmly in the value of primary suture, and considered that cases of failure of this method were due to the stitches not being put deep enough to include the whole cut area, but crossing the incision above its lowest part and so leaving an empty open space beneath the united portion. He spoke of the value of sunlight, artificial or real, in the healing of obstinate cases.

Mr. L. NORBURY agreed with the previous speaker as to the relation of the fistula to the external sphincter, but thought that in some cases the fistula might track between the fibres of the muscle. He also agreed as to the operability of tuberculous cases, referring to several very bad cases on which he had recently operated under spinal anæsthesia with complete healing. He asked if any member had had experience of the development of malignant disease in fistulæ.

Sir C. GORDON-WATSON described a case of malignant disease occurring on the site of a non-healed horseshoe fistula, shown to the Proctological Society some years ago. The man had died some three years later with a large mass of secondary deposit in the liver.

Reply.

The PRESIDENT, replying, spoke further of the pelvi-rectal abscess which he regarded as very rare; all his cases had been the result of gonorrhœal prostatitis with peri-prostatic abscess. A high rectal carcinoma might have a pelvi-rectal abscess and fistula as a secondary result.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held at the University of Bristol on Feb. 11th. In the absence of the President, Mr. J. LACY FIRTH took the chair.

Mr. PERCY SARGENT read a paper on the

Surgery of Tumours of the Central Nervous System.

He laid emphasis first on the necessity for accurate diagnosis. Coöperation between the neurologist and the surgeon must be close, and the former must afford the earliest opportunity for the latter to give that help to the patient which, in these cases, operation alone could bring. He proposed to speak of four classes of tumour.

Tumours of the Pituitary Region manifested themselves in two ways. Function was disturbed, with changes in the skeleton, in other glandular functions, producing such conditions as hairlessness, and pressure produced intolerable headaches with failing vision. It was for the latter symptoms that, in the present state of our knowledge, the skill of the surgeon was sought. These tumours fell into two divisions. 1. Simple adenomata of the pars anterior excavated the sella, and also pushed up the optic chiasma, but in invading the cranial cavity they remained encapsuled. It was with these types of tumour that the glandular disturbances might occur; and one must bear in mind that such patients bore operations badly. 2. The other division was composed of suprapituitary tumours: (*a*) meningeal tumours of the interpeduncular space, (*b*) tumours or cysts of complex structure probably arising from the infundibulum. With these the glandular changes are not remarked. Either type may be approached (1) by the temporal route used by Horsley 20 years ago, (2) from below through the sphenoidal sinus as advocated by Cushing, (3) by means of a frontal osteo-plastic flap as devised by Frazier. The speaker preferred the last method. The prognosis was best with adenomata; with improvement in technique the proportion of satisfactory results was quite gratifying. Suprapituitary tumours were less satisfactory to deal with. Some were cystic, and contained cholesterin; with these there seemed to be a risk of death from toxæmia following the liberation of the fluid.

Cerebello-pontine Tumours were usually neurofibromata of the auditory nerve. Others were cholesteatomata, or "pearl tumours." The former were usually firm, solid, encapsuled tumours, but might be soft or even cystic. They enlarged the internal auditory meatus, sometimes to a remarkable degree; this could be demonstrated by skiagraphy. Deafness and tinnitus might by the only symptoms for years. Loss of function of the vestibular part of the nerve was early demonstrable. Loss of the corneal reflex of the same side was also frequent. Later, the classical signs of tumour, headache, vomiting, and papillœdema appeared. By this time operation had become a more difficult, as well as a more hazardous, procedure. The tumours should not be removed en masse; this could be done, but the resulting disturbance to the vascular supply of the medulla commonly induced death; the tumour should be removed intracapsularly by morcellement. This method had given the speaker a mortality of 3 only in 19 cases. Decompression might be done if piecemeal removal was not thought advisable, but the results were not nearly so satisfactory.

The group of *endotheliomata* was histological rather than regional, though the tumours were meningeal and tended to be superficial. They cupped but did not infiltrate the brain, and probably arose from the arachnoid tufts which formed the Pacchionian bodies and so tended to be found about the longitudinal sinus. Growing very slowly, they might attain very large size before giving rise to symptoms. These tumours might often be diagnosed and localised with certainty before signs of general pressure appeared. This was a great advantage as an osteo-plastic flap could be employed. A two-stage operation was not advised; the patient might die between the two operations. These tumours formed only a small proportion of the whole class of tumours of the cerebrum and were rare in the cerebellum. The glioma of an infiltrating type was the common tumour. For these, decompression and partial removal gave some relief, and it seemed that gliomata were tumours favourable for the action of radium buried in their substance. In any case, where there was a high degree of intracranial pressure, any operation was fraught with difficulty and danger; the classical signs of tumour should be regarded rather as danger signals or even portents of impending death. Early and accurate diagnosis were the points of essential importance.

Spinal Tumours, he said, provided some of the most gratifying results of operation on the central nervous system. A large proportion were benign extramedullary growths, and in all these there must be some stage where operation afforded prospect of complete removal at very small risk. In addition to neurological means of diagnosis and lumbar puncture, skiagraphy after injection of lipiodol through the occipito-atlantoid ligament afforded valuable means of localising the tumour.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held recently, Dr. PETER HOWIE, the President, in the chair, when Dr. A. G. ANDERSON read a paper on

Encephalitis Lethargica.

Dr. Anderson's experience of the disease extended to some 20 cases, and he outlined the various points of interest which had emerged from the study of these cases. After describing the original appearance of encephalitis lethargica in 1917 and its spread in different countries, and stating that the description of "lethargic" was now inapplicable to many of the recent cases, Dr. Anderson recounted the details of the first case he had seen on March 17th, 1920, in a woman of 37, who presented the typical features of fever, ocular disturbance, and lethargy which lasted for seven or eight days. The most interesting feature was that in a few days the mask-like facies developed, and by the end of May the typically stiff gait like a case of paralysis agitans had appeared. During the next two or three years the residual phenomena noted were the mask-like face, the stiff hesitating movements of the limbs—the arms being held in the characteristic mid-brain attitude. Fortunately, the Parkinsonism was not progressive, and during the past year the patient had emigrated and was able to do active work. Dr. Anderson then discussed the development of the mid-brain syndrome, and indicated that this was now regarded as one of the commonest sequelæ of encephalitis lethargica, the time of its appearance being extremely variable.

In the description of further cases of the series Dr. Anderson dealt fully with the various characteristic symptoms and signs which had appeared, and discussed their features especially as regards period of onset and diagnostic and prognostic import. Such were Parkinsonism, lethargy, muscular and mental passivity, the running gait, akinesia paradoxica, disorders of speech, tremors, emaciation, excito-motor phenomena, pain, myoclonus, chorea, athetosis, spasmodic tics and automatic movements, facial paralysis, and signs simulating meningitis. One patient had a pregnancy after the onset of the encephalitis, a healthy child being born; the case illustrated the facts that encephalitis does not necessarily lead to premature labour, that the child need not be infected, and that pregnancy seems to have a definite effect in aggravating an existing Parkinsonian syndrome. In connexion with the choreic type of case Dr. Anderson described fully two cases: one, a boy of 14, who had attacks nightly lasting about four hours, when he went through a series of "antics"—coughing, snorting, jumping in and out of bed, and so on, till he fell asleep exhausted. The other case, also a boy of 14, had similar restless attacks with very marked insomnia, the wakefulness persisting till 4 or 5 A.M.; one period of insomnia lasted for 48 hours. This boy also had attacks of marked respiratory disturbance. The mental and moral changes in the disease were next discussed, and their problems indicated.

In conclusion, Dr. Anderson dealt with the theories of the infective nature of the disease, referring to cases which might lend clinical support to the idea. He also briefly referred to the necessity of a complete examination of the cerebro-spinal fluid in all cases, not so much for the possible positive findings as for

the information obtained making it possible to exclude other diseases. He stated that there was no really characteristic picture of the cerebro-spinal fluid in encephalitis lethargica except that it differed from most other diseases in that the sugar-content was invariably high. He pointed out also that in this disease the virus remained in the nervous system for long periods of time, waking into activity at intervals, and affecting different parts of the brain at different times; so that the original conception of a disease with an acute stage passing off and then followed by certain residual phenomena was no longer tenable. No form of treatment so far had been found to have the slightest effect, but in Dr. Anderson's opinion any form of effective treatment which might be discovered would probably be in the nature of an anti-serum rather than drugs.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society held on Jan. 21st Mr. DAVID LEES showed a cinematograph film prepared by Colonel L. W. Harrison on the

Diagnosis and Treatment of Gonorrhœa in the Male.

The film in a graphic and diagrammatic manner showed the progress of infection of the genito-urinary tract, the spread of infection, and complications likely to occur both immediate and late, and also demonstrated the importance of a knowledge of the anatomy and histology of the urinary tract in diagnosis, treatment, and in tests of cure.

Exhibition of Clinical Cases.

Mr. Lees showed two clinical cases and described a third.

1. *Juvenile Paresis.*—This patient, a boy aged 12, was admitted to hospital with definite spasticity of the legs and could not walk. Definite evidence of congenital syphilis was obtained both from the family history and the appearance of the fæces. The case presented, in addition to the spasticity of the lower limbs, lowered intelligence, inequality of the pupils, and exaggeration of the reflexes with marked clonic contractions in both ankle and knee reflexes. Localisation of the lesion was difficult. The specific infection had not involved grossly one definite area and a diagnosis of meningitis and myelitis was all that could be arrived at. The multiplicity of symptoms indicated that the prognosis was likely to be poor, and this was confirmed on examination of the cerebro-spinal fluid, which showed a strong positive Wassermann, increase of cells and globulin, and the so-called paretic curve in the colloidal gold test. The interesting point in the case was the amount of salvarsan that had been tolerated; this boy had tolerated more than an average adult dosage with increase of weight and general improvement; the importance was emphasised of forcing the dosage in the early stages. Careful re-education by exercises was practised, together with massage and tonic treatment.

2. *Juvenile Tabes in Association with Systemic Syphilis.*—The patient, a boy aged 12, was admitted to hospital suffering from subacute osteo-myelitis of the tibia, which on X ray examination showed definite sclerosis of the bone. In view of the subacute nature of the condition arsenic and bismuth were given with a very rapid result in easing the pain and causing general improvement of the patient. The father of this patient was at present under treatment for tabes, and the boy showed a definite Argyll Robertson pupil; the case was treated with silber salvarsan and bismuth with great improvement. There was a great cellular decrease in the cerebro-spinal fluid, from which globulin, though previously markedly increased, was now absent. The Wassermann test was still definitely positive, but it was hoped that with further treatment this would be negatived and that the later symptoms of the tabes would be prevented from appearing.

3. *Case for Diagnosis.*—This patient, a man aged 53, was admitted to hospital with a condition resembling a double Charcot's disease of the knee-joints. The history was that 20 years ago he contracted gonorrhœa, but no history of syphilis is given; he had multiple arthritis in the left knee 14 years ago, and in the right knee four years ago. For the last two years the joints had been painless, but now showed a bilateral arthritis with irregularity of the joint surface clinically suggesting Charcot's disease. On examination no appearance of any lesion, either of the genitals, skin, or mucous membranes was found, there were no signs on examination of the eyes with the exception of early choroiditis; the pupils reacted to light and accommodation equally and well. Knee-jerks and ankle-jerks were present, likewise the abdominal and cremasteric reflexes; there was no disturbance of sensation and no ataxia or incoördination—in fact, not a single sign or symptom which would suggest that the patient was suffering from the disease. The Wassermannn reaction in both blood and cerebro-spinal fluid was negative, in the cerebro-spinal fluid globulin was negative, the cell count was 1 per c.mm., the colloidal gold test 001332210000. There was no clinical evidence of gonorrhœa except an enlarged left vesicle; the prostatic and vesicular secretion contained pus cells in excess, but no organisms; the complement-fixation test for gonorrhœa was negative. X ray examination showed appearances resembling Charcot's disease; fluid aspirated from the joint showed no cellular deposit, and was sterile. The question was whether this condition was Charcot's disease, gonorrhœal arthritis, or osteo-arthritis.

Miss GERTRUDE HERZFELD described a case of an infant who developed ophthalmia neonatorum four days after birth; a fortnight after birth swellings appeared in the left carpo-metacarpal joint and the right elbow; this latter increased and six days later was aspirated, the fluid showing gonococci. Three and a half weeks after birth the elbow and hand were opened and pus removed from both joints. After this swellings appeared in the right ankle and left knee, an autogenous vaccine was given but without immediate effect, and both these joints were opened and pus evacuated. At present the joint swellings were subsiding, the first to be incised had healed, the others were still discharging to some extent. Vaccine was being injected with apparent benefit and without marked reaction.

Mr. J. M. GRAHAM showed a pathological specimen of

Charcot's Disease of the Hip-Joint.

The specimen was from a woman aged 46, admitted to hospital as a case of sarcoma of the hip and who died unexpectedly a few days after. The patient had been known to suffer from tabes for four years, but when under treatment in a medical ward there was no evidence of any trophic change, and up to four months before admission she was able to walk well. Quite suddenly the right leg began to swell and she noticed shortening of the leg. Her doctor was called in and found a large tumour extending from the lower part of the iliac fossa down almost to the upper third of the thigh. On admission to hospital the condition was diagnosed as Charcot's disease, and this was confirmed by X rays. The specimen showed enormous increase in the area of attachment of the capsule which was markedly thickened, and with enormous thickening of the synovial membrane, the processes in great masses resembling a nail-brush. There were large definite tumour-like formations undergoing calcification. Sessile nodules were present but not loose bodies. The bone showed gross changes and the acetabulum was almost devoid of cartilage, and many large bursæ were situated around the joint.

ULSTER MEDICAL SOCIETY.

AT a meeting of this Society on Feb. 5th, Dr. J. SINGLETON DARLING, the President, in the chair, Dr. A. GARDNER ROBB read a paper on

Epidemic Encephalitis in Belfast in 1924.

The outbreak in Belfast began at the end of March, 1924. For the first few weeks the cases were few; about the middle of April there was a sudden large increase of admissions to the Belfast fever hospitals, and the cases continued to come in in large numbers until the end of June, when the epidemic ceased even

more suddenly than it had begun, only one case occurring after that date. This seasonal outbreak coincided exactly with the experience in Belfast in the year 1920, the only other year in which there has been a serious epidemic. In that year the first cases were notified in March, there was a large increase in April, a still larger number in May, then a rapid fall in June, and by the middle of July the epidemic was at an end. The total number of cases admitted to the fever hospitals in the recent outbreak was 183, and 90 per cent. of these were admitted within two months —viz., from mid-April to mid-June. The prominent symptoms at the onset were: (1) Fleeting superficial neuralgic pains. (2) Nocturnal insomnia, often complete and lasting for several nights. (3) Mental excitement and exaltation, great restlessness, and talkativeness. A little later came: (4) Diplopia and other eye symptoms. (5) Muscular twitchings of varying degree. (6) Delirium of varying degree. (7) Lethargy of varying degree. In many cases one or more of these symptoms were absent. The neuralgic pains were usually on the scalp, over the ears and sides of the neck, down the arm, on the forearm and fingers, especially the thumb; over the iliac crests, unilateral at first, later bilateral. In some cases the pains were in the leg, foot, or axillæ. It was noticed that while light touching or stroking was intensely painful, firm handling caused little or no pain. Nocturnal insomnia was a very early symptom and sometimes lasted for several nights. Some patients were very excited and talkative, and in many cases the patient, if left alone, sang or whistled throughout the entire night. Diplopia was present in 73 per cent. of cases; usually it was not observed until the second or third day. Squint, ptosis, nystagmus, and partial loss of accommodation were frequent. Muscular twitchings were present in 70 per cent. of cases; they were mild or severe. In some cases they were as severe as in severe chorea. Myoclonic jerkings of the abdominal muscles were common. Delirium was noted in 52 per cent. of cases. It varied from a low muttering type to severe maniacal states. It usually quieted down after a day or two. Lethargy was present at some stage in 72 per cent. of cases. It appeared usually in the third or fourth week and varied in degree. In many cases it was at first present only in the daytime, the patient being wakeful at night. Later it was continuous, and in a few cases there was profound coma lasting for weeks. Herpes occurred in 6 per cent. of cases. Attacks of dyspnœa were frequent. Polyuria was common. Lumbar puncture was performed in many cases. Little that varied from the normal was found except an increased sugar content. This point is one of diagnostic value. Paralysis of the facial muscles was rare. In only a very few instances was there more than one case from the same house. No member of the staff at the hospitals contracted the disease. In the 183 cases admitted the mortality was 11·4 per cent. Pregnant women did not show a mortality above the average. Many cases recovered temporarily and returned to work, only to relapse later. Opinions differed as to the proportion of cases of complete recovery. Some physicians put the figure as high as 25 per cent. or even 50 per cent. Dr. Robb thought this figure much too high. He thought 5 per cent. was nearer the mark. In the vast majority of cases some residual effects persisted.

As regards treatment there was no drug of proved value. Hexamine did not seem to possess much influence. Salicylate of soda had little influence over the pains of the disease. Paraldehyde was the best hypnotic. The turpentine ("fixation abscess") treatment, the use of diphtheria antitoxin, the intravenous injection of the patient's own cerebro-spinal fluid, frequent lumbar puncture, intramuscular injections of sterilised milk, were methods which he could not recommend. Hyoscine was of some value in dealing with Parkinsonism. He agreed with Prof. Hall that "at present any reliable therapeutic, either for the disease itself, or for its many after-results, does not exist."

Reviews and Notices of Books.

EXAMINATION OF WATERS AND WATER-SUPPLIES.

Third edition. By JOHN C. THRESH, D.Sc., M.D., and JOHN F. BEALE, B.A., M.R.C.S. London: J. and A. Churchill. 1925. Pp. 590. 25*s*.

A THIRD edition of this standard work is welcome at a time when so many matters of moment in connexion with water-supply are in a state of flux. The book which is, in most respects, thoroughly up to date, is arranged in five parts, with 33 chapters, a useful appendix and admirable index, and between the two covers lie 590 pages.

Part I. deals with reasons for which waters and their sources are examined—geology in relation to sources of supply and the character of water which is derived from different geological sources. This is a particularly useful section wherein the authors lay great stress on the topographical observations. Part II. occupies 111 pages and deals adequately with many aspects of the question. The chapters on the examination of (*a*) the sources of surface water-supplies, (*b*) rivers and streams, (*c*) springs and wells, and (*d*) waterworks, reservoirs, and mains, make good reading. When recommending *B. prodigiosus* as a test organism for tracing pollutions, the authors are not quite correct in saying that this microbe is very rarely found in any water-supply. Chapter VIII., on the purification of water by storage, is fragmentary and sometimes even a little misleading. The statement that "rivers and streams in flood . . . . recover their pristine condition in two or three days" is too sweeping an assertion. The questions at issue are for how long under conditions of low temperature, ground saturated with water, and recurrent rainfall, do rivers yield results continuously bad, and what duration of storage should be aimed at in order to secure safety. The fact that chlorination is a short cut to purity is not evidence against the desirability of prolonged storage without chlorination in the interests of the water consumer. In the account (p. 106) of the 1906 chlorine experiments at Cambridge the names of Otto Hehner and Alexander Houston, who were associated in the inquiry with Sims Woodhead and Dr. Thresh, are not mentioned. It is stated on p. 116:—

> "Hertford is probably the only town in England where chlorine is added to the sewage effluent, and this is because the effluent enters the River Lee not far above an intake of the Metropolitan Water Board. Now that chlorination is being carried out at the waterworks, the chlorination of the exceedingly dilute effluent from the Hertford works is probably unnecessary."

The river Lee has never been chlorinated and is alone affected by the discharge of the Hertford sewage effluent. The New River is chlorinated, but the intake is above the point of discharge of the Hertford sewage effluent.

Chapter XI., on the purification of water by means of lime, is welcome. Workers from all parts of the world have been to see the authors' experiments at the Langford station, and the results obtained have attracted great attention. If the advantages of the excess lime method ultimately become widely recognised, it will be largely due to Dr. Thresh's patient investigations and his tenacity of purpose. The description of the processes for the softening of water and removal of iron are useful, but possibly too brief. An important chapter deals with the treatment of water to prevent action on lead and to remove colour. If soluble silicates can achieve the remarkable results the authors have outlined, Dr. Thresh deserves cordial congratulations on the outcome of much careful work. The chapter on the suitability of water for swimming baths and for trade purposes will be welcomed by a wide range of readers.

The third part of the book is devoted to a bold and able attempt to clear up our somewhat hazy conceptions as to what constitutes a "pure and wholesome water." It is not easy to give a definition that will be recognised as universally applicable, but it is certain that with modern methods of purification it is, at all events, safe to use waters for domestic consumption which in the old days would have been undoubtedly rejected. The authors' conclusions as to the permissible limits of various salts in water will be generally accepted as reasonable. A chapter on the interpretation of the results of physical biological, chemical, and bacteriological examinations, is full of interest, though the section devoted to odour and taste is disappointing. A chapter on electro-conductivity and hydrogen-ion concentration is a most welcome addition. The interpretation of the results of bacteriological examination of waters is one of the most important in the book. The authors complain, with good reason, of the wording of some bacteriological reports, which often create quite unnecessary alarm. It is wrong to say of a water going perhaps to a million or more consumers that it is "quite unfit to drink," or "dangerously polluted" simply because it contains *B. coli*, when the water has been drunk for years with perfect safety. Bacteriologists should, of course, aim at a high standard of purity, but a chance sample of water containing *B. coli* in 100 or even in 10 c.cm. does not necessarily indicate an alarming state of affairs. It is one thing to say that a sample does not reach the highest standard of bacteriological purity and quite another thing to assert that it is actually dangerous to health. The authors show wisdom in the following caution:—

"Too great an importance must not, however, be attached to bacteriological results, since great care is required in their interpretation. Want of experience, or a too rigid adherence to empirical standards, may easily lead to erroneous conclusions. Some knowledge of the history of a water is in most cases absolutely necessary in order to enable correct inferences to be drawn."

The book is comprehensive, and other sections deal with the interpretation of chemical analyses, analyses for sanitary and other purposes, collection of samples, physical examination, character of suspended matters, chemical analysis, examination of grossly polluted waters, softening of water and excess lime process, action of water on lead, estimation of saline constituents, and special analyses, a table of analyses of waters from various geological sources being provided.

A certain intolerance of opposing views is noticeable on occasion throughout the book and the significance of the experiments carried out by other observers is not always correctly interpreted, but the volume as a whole has great merit as a practical contribution to the literature of water-supply.

PNEUMONIA.

Its Pathology, Diagnosis, Prognosis, and Treatment. By the late R. MURRAY LESLIE, M.A., B.Sc., M.D. Edited and revised by J. BROWNING ALEXANDER, M.D., M.R.C.P. Lond. London: William Heinemann (Medical Books), Ltd. 1924. Pp. 351. 12*s*. 6*d*.

THIS book was commenced by Dr. Murray Leslie in 1919, and had practically reached completion when the author died. Dr. Browning Alexander has revised the work and brought the bacteriological section up to date, as well as the sections dealing with vaccine therapy. The book is a comprehensive survey of the epidemiology, ætiology of pneumonia, and of the clinical practice in its treatment. Practically all the ground relating to this ubiquitous disease is well covered.

A fairly full account is given of the researches at the Rockefeller Institute on pneumococcus types, but there is a regrettable tendency to use the words "type" and "group" as though they were synonymous terms. Serum therapy, including both the old antipneumococcal sera and the new serum of the Rockefeller Institute, receives due attention. Vaccine therapy is dealt with in a final chapter, where the opinion is expressed that there is little appreciable difference in the course of the disease when untreated or treated by vaccines. On the clinical side the use of alcohol (1) as a food, (2) as a drug is discussed at length. The administration of oxygen is dealt with in detail, and the various methods of using oxygen described. The thorny subject of digitalis therapy is well discussed.

In the chapter on diagnosis a short section has been devoted to radiographic diagnosis which is perhaps more commonly used abroad than in this country in cases of pneumonia. The authors consider that this relatively new method of diagnosis has thrown considerable doubt on the hitherto accepted ideas regarding the so-called central pneumonia. The chapter on prognosis is one of the most interesting, especially when read in conjunction with the later section on the maintenance of the circulation. The authors rightly lay stress upon the cardio-vascular system in this connexion, and suggest as a working maxim, "Take care of the heart, the lungs will take care of themselves," though they point out they do not wish to imply the early and continuous use of cardiac stimulants.

The book should find a ready public, since it is written from a common-sense point of view by two clinicians who have a wide experience of the disease, and who will be recognised as a sound guide by practitioners.

CLINICAL ASPECTS OF THE ELECTROCARDIOGRAM.

By HAROLD E. B. PARDEE, M.D., Associate in Medicine, Cornell University Medical School; Consulting Cardiologist, Lying-in Hospital and Woman's Hospital, New York City. New York: Paul B. Hoeber, Inc. Pp. 222. 1924. $4.

THE author of this well-written book has given the reader all that he can be expected to know about clinical electrocardiography. In this volume nothing of clinical importance likely to assist in the interpretation of the electrocardiogram has been omitted, nor has any neglect been shown in dealing with the experimental evidence upon which our knowledge of this subject, in the main, depends. It is a work which can be recommended to all who intend to specialise in disease of the cardio-vascular system and to the cardiologist who already has a working knowledge of the electrocardiograph.

It is not a book for the general practitioner. He should not be expected to be familiar with all the current knowledge of clinical electrocardiography, nor the experimental observations and theories upon which the interpretation of the electrocardiogram is based. There are ten chapters, all of which are well illustrated with helpful diagrams and electrocardiographic records which are exceedingly well reproduced. The subject-matter is dealt with in a clear, concise style under such headings as Disturbances in Rate and Rhythm, Clinical Aspects of Disturbances in Rate and Rhythm, the Use of the Electrocardiograph in the Examination of Patients.

The author at all times endeavours to keep the clinical aspects of his subject in the foreground, and refers to experimental observations only when they are likely to afford information of clinical importance. In discussing premature beats, he distinguishes those which are of no prognostic importance and others which indicate structural disease. This distinction is not based on experimental evidence, nor are clinical observations recorded which support the view that premature beats as an isolated sign are of prognostic importance. It is realised, for obvious reasons, that electrocardiographic records cannot be obtained in all patients; it is important, therefore, that this method of examination should not be omitted when an electro-

cardiogram is likely to give information of diagnostic and prognostic value. The type of patient who may have an abnormal electrocardiogram is described, and the significance which one should attach to electric curves in these clinical groups is discussed. Einthoven's tables for the determination of the direction of the heart current recorded by the three standard leads are given in an appendix. The bibliography is conveniently arranged under subject-headings.

THE CHEMISTRY OF ENZYME ACTIONS.

Second and revised edition. By K. GEORGE FALK. New York: Chemical Catalogue Co. 1924. Pp. 249.

IN this small volume the author has attempted to provide a summary of modern views and theories with regard to enzyme action. After an interesting introduction Mr. Falk considers in detail the factors affecting enzyme reactions, notably the velocity, temperature, and colloidal influences. Among the most interesting chapters are those dealing respectively with the mechanism and the use and application of enzyme action. A chapter upon enzyme actions and tissues and tumours is included. The volume contains little original matter, but it presents an excellent summary of current views. Full references are given and the descriptions are clear and accurate.

PRINCIPLES AND PRACTICE OF OBSTETRICS.

Fourth edition. By JOSEPH B. DE LEE, A.M., M.D., Professor of Obstetrics at the Northwestern University Medical School, Chicago. Thoroughly revised. London and Philadelphia: W. B. Saunders Company Ltd. 1924. With 1128 illustrations on 923 figures, 201 being in colours. Pp. 1123. 55s.

THE fourth edition of this very complete treatise on obstetrics has been thoroughly revised; many of the less satisfactory illustrations have been replaced. The author deplores excess of zeal in undertaking obstetric operations and maintains a strongly conservative attitude throughout the book. A watchful and armed expectancy, he says, has proved to give the best results. He strongly condemns the indiscriminate use of pituitrin as practised to-day; we agree that this drug should not be used until after the child has left the uterus. Antenatal care is fully discussed and emphasis is laid on the value of the proper conduct of the hygiene of pregnancy as a means of preventing complications. Dr. De Lee does not believe that eclampsia can always be prevented; in discussing the treatment of this disease he states that prompt delivery will save most mothers and children—that is, if the patient is in skilled hands; but if operative skill and experience are lacking, he is strongly in favour of the conservative treatment of Stroganoff preceded by a generous venesection. His objection to eliminative methods, especially colonic flushing and catharsis, is that they soil the field of operation. The section dealing with parturient injuries of the higher pelvic fascia and pelvic floor is very good, and several new illustrations have been added here. The author lays great stress on the proper repair of these injuries and is a strong advocate of episiotomy as a prophylactic measure. He considers that an important cause of perineal tears is a narrow pubic arch, and is convinced that a large number of the deep lacerations in forceps cases are due to the unrecognised funnel pelvis. With this observation we are in entire agreement, but apparently marked contraction of the outlet is more common in America than in this country.

Dr. De Lee is an enthusiast for the new transperitoneal cervical Cæsarean section, or laparotrachelotomy as he terms it. He believes that this operation should replace the classic one in all but a few exceptional cases, as it can be performed after a woman has had a real test of labour and in cases where the abdominal section would not be considered—e.g., after a few attempts with forceps have been made and even where there is a slight possibility of infection; he considers that this procedure should almost eliminate the necessity of craniotomy on the living child. He claims for laparo-trachelotomy the following advantages: that the incision is made in the lower uterine segment and consequently there is less hæmorrhage and shock, that the intestines are not disturbed, and the field is not soiled by the uterine contents. Post-operative complications are rarer, adhesions are reduced to a minimum, and there is less likelihood of subsequent rupture of the uterus, there being only three cases reported to date. The maternal mortality is less, and out of 266 cases operated upon at the Chicago Lying-in Hospital there has only been one death, although many of the cases were unfavourable ones. Twelve new illustrations of this operation with full descriptive legends have been added, and these give an excellent idea of the technique employed. Without sharing the author's optimism, we think he has made out a good case for transperitoneal cervical Cæsarean section, and we await the publication of a larger series of cases with interest.

This new edition fully confirms the favourable opinion we formed of this book on its first appearance. It is beautifully illustrated and clearly printed, and is one of the best works on obstetrics in the English language.

JOURNALS.

JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXVIII., No. 1. Pp. 1–132. January, 1925.—The Mechanism of Hæmolysis by Complement Action, by A. Hill and G. Parker (Shanghai). An experimental hypothesis of the intimate relations of red cells, immune body, and complement in a hæmolytic system which will hardly be followed by any but real mathematicians. The upshot of it is, in common language, that hæmolysis is ascribed to complement acting intracellularly in the period between its entrance into the cell and its combination with cell constituents, both entrance and combination taking place under the influence of immune body. In this period complement acts as a catalyst, encouraging the release of hæmoglobin by a ferment in the immune body more and more of which is set free with the progress of the hæmolysis. The final fixation of the complement is due to its combination with some other constituent of the immune body.—The Deviation of Complement in the Wassermann Test, by A. Hill, R. N. McKnistry, and G. Parker (Shanghai). The principles of the preceding analysis of the inwardness of hæmolysis are applied to a new quantitative modification of the Wassermann reaction.—Regeneration of the Lizard's Tail, by C. Powell White (Manchester). The process of regeneration has been studied in a series of wild *Lacerta vivipara* caught in North Wales, which after autotomy had more or less regained their normal structure. Regeneration takes place from a growing point consisting of a mass of undifferentiated cells situated immediately beneath the epidermis at the apex. From this all the tissues are re-grown except the epidermis, which spreads along from the remaining edge and the nerves, which are derived from the last three pairs of roots in the stump. The muscles develop segmentally and in the end the spinal cord is represented by a simple epithelial tube like a long filum terminale and the vertebræ by a continuous unsegmented tube of cartilage.—The Serological Classification of the Tubercle Bacilli by Agglutination and Absorption of Agglutinins, by G. S. Wilson (Manchester) (see THE LANCET, Feb. 14th, p. 348.—The Oxydase Reaction in Acute Myeloid Leukæmia, by A. Piney (London). The oxydase reaction has generally been recognised as appearing in neutrophile leucocytes at the stage in

their development which is marked by the appearance of definite cytoplasmic granules. The observation that a positive oxydase reaction may be obtained in the pre-granular phase is shown to be due to the use of stains which are not the most effective in bringing out the granules.—Observations on Platelet Genesis, by S. P. Bedson and Mary E. Johnston (London). Anti-lymph gland and anti-endothelial sera have no effect on the blood platelets in vivo; anti-bone-marrow serum destroys most of them in the circulation without causing purpura, while anti-spleen serum destroys the platelets and produces purpura. The spleen does not normally produce platelets and its richness in platelet antigen is due to their accumulation there from the blood. By exclusion, the authors conclude that during extra-uterine life platelets are generated in the bone-marrow; they fail to find any fresh evidence to support their former view that the platelet is an independent element, and appear to be coming round to Wright's hypothesis of an origin from megakaryocytes.—Spirochæte-like Structures in the Cerebro-spinal Fluid of Experimental Animals, by D. K. Adams, J. W. S. Blacklock, and J. A. W. McCluskie (Glasgow). Deceitful spirillar structures are found almost constantly in the lateral ventricles of monkeys, rabbits, and guinea-pigs.—Spirochætes in the Ventricular Fluid of Monkeys Inoculated from Cases of Disseminated Sclerosis, by the same authors. Real spirochætes were found in two monkeys similar to those previously recorded from inoculated rabbits.—The Normal Differential Leucocyte Count in South African Natives, Chinese, and Others, by the late E. Emrys-Roberts (Cardiff). Compared with British students, all showed a relative lymphocytosis.—The Leucocytes in Osteitis Deformans, by A. Piney (London). Five cases all showed an increase in eosinophiles and basophiles.—Avian Tuberculosis in a Marsupial, by N. S. Lucas (London). Tuberculosis has apparently not been found before in a marsupial; the author records a case of infection with avian bacilli in a rufous rat-kangaroo from New South Wales in the London Zoological Gardens.—Multiple Microscopic Metastases in the Spleen in a Case of Liver-cell Carcinoma, by D. F. Cappell (Glasgow). There was unusually widespread bare-eye metastasis.—Variations in Immunity Response in Different Animals, by A. T. Glenny (Beckenham). From a variety of examples the caution is drawn not to found immunological conclusions on small series of experimental animals.—Interim Report of the Committee on Status Lymphaticus appointed jointly by the Society and the Medical Research Council. While asking for assistance in accumulating more data, the Committee publish their provisional conclusions, of which the most important is that there is no evidence to show that there is any connexion between the presence of a large glandular thymus and death from unexplained or trivial causes; as many large glands are found in young persons killed by violence as in those dying under an anæsthetic.

BRITISH JOURNAL OF OPHTHALMOLOGY.—November, December, and January, 1924–25.—We have already noticed W. J. Adie's article in the November number on Cataract in Dystrophia Myotonica.[1] The greater part of the November and the December numbers is occupied with recent investigations by means of the slit-lamp.—Basil Graves presents a report adopted by the Lang Clinical Research Committee on a bilateral chronic affection of the endothelial face of the cornea of elderly persons, diagnosed by the aid of the slit-lamp, which may or may not be the precursor of the affection described by Fuchs as "Dystrophia Epithelialis Corneæ."——The December number contains the 1924 Doyne Memorial Lecture of Harrison Butler on focal illumination of the eye with special reference to the clinical use of Gullstrand's slit-lamp with illustrations of the appearances presented by different varieties of cataractous and subluxated lenses. Even without the use of the Gullstrand lamp much information may be obtained by carefully focusing a point of any strong light at different depths behind the cornea. This is not nearly so dazzling as diffused illumination, and so tolerant is the pupil to focused light that it is possible to examine with the narrow ribbon of the slit-lamp a patient with an inflamed photophobic eye who could not tolerate diffuse light of an intensity sufficient to reveal necessary detail. Harrison Butler is an enthusiast for the new method.——In the January number Henry Friedenwald and Jonas S. Friedenwald write on epithelial dystrophy of the cornea, connecting the affection described by Fuchs with that described in the November number by G. Graves. —There are also an article by D. J. Wood on ocular leprosy, well illustrated, and a note by A. S. Percival on the alteration of the power of the cylinder when used for close work, on which we recently published an annotation.

[1] THE LANCET, 1924, ii., 1189.

Reports and Analytical Records.

POST'S BRAN FLAKES.

(GRAPE NUTS CO., LTD., 5, CHANCERY-LANE, LONDON, W.C. 2.)

THIS preparation claims to be a mixture of bran flakes with other parts of the wheat berry and is one of the well-known class of ready-cooked breakfast cereals which appear to be gaining popularity in this country. When analysed the flakes were found to have the composition :—

Assimilable carbohydrates	69·3 per cent.
Moisture	9·6 " "
Fat	1·7 " "
Proteins	13·2 " "
Mineral matter	3·5 " "
Cellulose	2·6 " "

Calorie value per lb. 1608.

The carbohydrates consist for the most part of starch which has been gelatinised and flaked. It is to the cellulose and mineral matter present that the mildly laxative action claimed for the preparation is due. The calorie value is a high one and comparable with that of wheaten flour.

FRY'S PURE SOLUBLE COCOA.

(J. S. FRY AND SONS, LTD., BRISTOL.)

When analysed this cocoa gave the following results :—

Fat	25·1 per cent.
Moisture	4·2 " "
Total ash	7·0 " "
Water-soluble ash	5·5 " "
Alkalinity of water-soluble ash as K_2O	2·4 " "

These figures are typical of a high-grade "soluble" cocoa. This so-called solubility is due to the customary treatment with a small amount of alkali during roasting. As the subject of preservatives in foods is claiming considerable attention at the moment, a special search was made for sulphites, borates, and salicylates. The results were negative.

PLAYER'S "NO. 3" VIRGINIA CIGARETTES.

(JOHN PLAYER AND SONS, NOTTINGHAM.)

These cigarettes are cork-tipped and heavier than most of the Virginia cigarettes on the market, about 21 going to the ounce. The paper on each cigarette weighed 0·06 g., or about 4·5 per cent. of the weight of the cigarette. On analysis the following results were obtained :—

Moisture	13·0 per cent.
Ash	10·7 " "
Silica	1·5 " "

The tobacco is fine-cut and of good quality and the cigarettes burn evenly and not too rapidly.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 21, 1925.

SOME INTIMATE ASPECTS OF HUNTER.

THE opening pages of our issue this week are occupied with the Hunterian Oration delivered on Saturday last, Feb. 14th, by Sir D'ARCY POWER, before the Royal College of Surgeons of England. The Hunterian Orator approached his great subject from a particularly intimate biographical side, and as a result was able to give pathetic details of the physical disabilities under which the Father of modern surgery carried on his magnificent work during the last 25 years of his life. JOHN HUNTER died of widespread disease of the arterial system, the largest as well as the smallest arteries being involved, and there seems no doubt, after the minute and tragic story set down by the Hunterian Orator, that the cerebral symptoms from which he began to suffer after he had inoculated himself with syphilis in 1767 continued intermittently until his death in 1793. The whole of the picture, as vividly drawn by Sir D'ARCY POWER, becomes coherent when we read of HUNTER'S pathological lesions alongside of the description of his mentality, while we remember the splendid range of his accomplishment. We can understand the devoted affection which he inspired in his pupils, and we can understand also how a man devoid of all tact, and ill-equipped in accurate phrasing or the arts of persuasion by speech or by letter, should have made bitter enemies; and it was a happy thought which inspired the exhibition during the Oration of a series of illustrations directly lampooning the venerated subject of the discourse. For often the advocatus diaboli proves himself a valuable biographer, in proof of which we may refer to Mrs. PIOZZI, who in her venom threw light on the great JOHNSON, where the pious BOSWELL was silent.

In this way, that good hater, JESSE FOOT, by revealing the existence of a group of men who were rendered suspicious and jealous by the reiteration of HUNTER'S merits, shows us that HUNTER often felt himself in contest with personal foes and knew himself to be the subject of limitless detraction at their hands. For this circumstance dictated the uncomprising attitude which he always adopted in his personal disputes. The water-colour drawings, which were exhibited by means of the epidiascope at the close of the Oration, were executed for FOOT by an artist named BEAUMONT, to accompany a scurrilous life of HUNTER, the preparation of which seems to have occupied the last 30 years of FOOT'S life—he was a pamphleteering medical practitioner, 16 years HUNTER'S junior. The sketches are not only skilful in detail but so consistent as to portraiture that to the eye of candour, as FOOT might have said, they appear both contemporary and correct. Three volumes of FOOT'S history, thus extra-illustrated or "grainger-ised," are now in the possession of the Wellcome Historical Museum, and for the following information concerning them we are indebted to Mr. VICTOR PLARR, Librarian to the Royal College of Surgeons of England. "A note," he says, "by FOOT on the back of a ball programme, dated from Ilfracombe in 1823, disputes with one, DYER the publisher, as to the price to be paid for the collection of illustrations, DYER claiming not less than £86, plus extras, and FOOT standing out for £78. How the matter was settled is not known. The pictures are not caricatures, but may be described as excellent uncivil likenesses. JOHN HUNTER first appears holding WILLIAM HUNTER'S invitation to London in his hand, and labouring at rough farm carpentry. Then in the kind of Highland dress the English of that day supposed Lowlanders to wear, he bids good-bye to his old father at the ancestral farm. He is handed a big bag of bawbees, and looks a nice red-haired Scotch laddie. Doubtless, in common with others, FOOT resented HUNTER as an interloper from the Kingdom of Scotland. In a blue suit the young HUNTER is next seen repairing to the shop of a dentist and barber. He holds a hare punningly in his hand in allusion to Spence's stock of wigs, displayed with dentures in the shop window, and it is suggested that he forms a disreputable partnership with SPENCE. HUNTER now sheds his blue coat, becomes a successful surgeon, and appears as a typical grave figure in black, a flat black wideawake on his still auburn locks. He looks for all the world in successive sketches like a little curate—a curate of genius. FOOT, whose picture is inserted, appears by contrast stately, in blue coat and buff waistcoat and breeches. There is next a sketch of HUNTER'S very bare surgery and consulting room, where he is seen malpractising on the small son of Sir ROBERT ROWLEY, bitten by a mad dog, and one of HUNTER'S supposedly suppressed failures. In another scene the irate and stately PETRUS CAMPER advances with a horsewhip on HUNTER. Again, we see JOHN and WILLIAM HUNTER disputing across a table at the Royal Society in the presence of Sir JOSEPH BANKS, so hated by 'PETER PINDAR.'"

The learned librarian's comments thus bring us to the examples of BEAUMONT'S pictures inserted in our text. One of these records that HUNTER builds a house in Leicester-square, and entreats the eccentric MARTIN VAN BUTCHELL, bearded and wearing a billy-cock, and mounted on a queer pony, to come and survey the premises. In another picture a golden calf is over the door and the approaching figure of EDWARD JENNER worships it—perhaps prophetically. In a third, HUNTER drives a pair of buffaloes from his Earl's Court house to Leicester-square and extends a friendly hand to a menagerie showman en route. A fourth is a vile rejoicing at HUNTER'S sudden death in St. George's Hospital. HUNTER'S face throughout the pictures is distinctive with prognathous jaw, pointed chin, lean cheeks, long sharp nose, and yellow natural hair. It is no small tribute to the fame of the philosopher that 30 years after his death FOOT knew that his enemy's personality would be recognised. This outburst of spleen had a result exactly opposite to its intent, revealing as it did to all men the welter of suspicion in which HUNTER moved and the magnificence of his triumph over it.

THE BACTERIA OF FOOD POISONING.

SINCE it has been ascertained that nine out of ten outbreaks of food poisoning are traceable to bacteria of the Salmonella group, the public have a right to ask that efforts should be made to prevent the infection of food by these organisms. The Ministry of Health has enlisted the coöperation of the Medical Research Council to this end, and while the actual paths through which the organisms find their way into incriminated foodstuffs still elude discovery, the results of an investigation subsidised by the Council clear away

several preliminary difficulties. A report[1] by Dr. W. G. SAVAGE in association with Mr. P. BRUCE WHITE throws light, not only on the identification and classification of bacteria of the Salmonella group, but also on their distribution in nature and on the effects produced in animals by infection with different types of organisms. All the members of this group are short sporeless bacilli with rounded ends, possessing flagella and exhibiting motility. They are Gram-negative, stain readily with ordinary dyes, and are bile-tolerant. Their principal cultural characteristics are good growth on agar and on gelatin, which is not liquefied, the production of acid and gas from glucose and mannite, and the inability to ferment lactose, saccharose, and salicin, or to produce indol. Classification of the types of organism which make up this group has been attempted by various observers on the basis of morphological and cultural characters, of serological properties, of the source of derivation, of the pathological reaction in man and other animals, and of protective specificity. The result has been great confusion and overlapping. Dr. SAVAGE and Mr. WHITE give good reasons for regarding the biological and serological characters of the different strains as the most satisfactory basis for differentiation, using the other properties as confirmatory factors. From the examination of 150 strains Mr. WHITE has differentiated ten main types, which correspond very closely with those identified and described by H. SCHÜTZE in THE LANCET (1920, i., p. 93), and the first part of this report is devoted to a discussion of their serological properties. The distribution in nature of these species and the type of disease they may produce in man as well as in animal hosts has been provisionally tabulated in the second part of the report. The common causes of food poisoning outbreaks are *B. aertrycke* and *B. enteritidis*. Of these the former produces disease in cows, calves, and rats, while the latter is a widespread cause of enteritis in mice, guinea-pigs, and birds; it is occasionally found in pigs and calves but does not occur commonly in rats. The Derby, Stanley, and Newport types can also cause food poisoning in man, but their distribution in nature is apparently much less widespread. The Stanley type has not yet been isolated from animals; the Newport type is unknown in animals other than dogs; and of the Derby type, which has been isolated from pigs, the exact disease-producing rôle is unknown. *B. suipestifer* is exceptional as a cause of food poisoning, requiring special conditions such as massive infection. The fact that of all these species *B. aertrycke* is the least specialised as regards animal hosts may well be related to its common association with food poisoning in man.

That bacilli so closely related in their biological affinities should yet have such different pathological significance is a matter of great interest. For example, *B. paratyphosus* B regularly causes paratyphoid fever in man and probably never produces acute food poisoning of the ordinary type; further, there is no evidence that it can set up disease in animals. *B. aertrycke*, on the other hand, never causes paratyphoid fever in man but commonly food poisoning, and is found not infrequently to be the causative agent of disease in animals. Dr. SAVAGE and Mr. WHITE have attempted, in the third part of their report, to throw light on these and other pathological differences by a study of the local action of different types of Salmonella bacilli upon the alimentary tract in experimental animals. Parenteral introduction of organisms has been used for certain experiments, but in the main bacilli have been administered by the mouth, in order that the method of introduction may be comparable with that in the human victim of food poisoning. The majority of the feeding experiments have taken the form of a comparative study between *B. aertrycke* and *B. paratyphosus* B. Experimental evidence supports the view that the essential lesion in food poisoning is irritation of the alimentary tract by a toxic substance which the authors believe to be an internal secretion of the organism, and to be directly associated with the virulence of the strain. The irritant effect is most vigorously exhibited by those strains which are responsible for food poisoning outbreaks and is much less evident, though not entirely absent, in types such as *B. paratyphosus* B and C, which do not cause human food poisoning of the ordinary irritant type but set up a more general infection.

In a review of the relationship of some of the factors concerned in infection to food poisoning outbreaks and animal infections which concludes the report, it is noted that the serological classification coincides at many points with differences in cultural behaviour, distribution, toxicity, invasive power, and pathogenic behaviour, though a great deal more work must obviously be done before conclusive results are reached. Unfortunately, in all outbreaks of food poisoning, whatever the type of organism concerned, the clinical features are essentially the same. The symptoms are those of intense gastro-intestinal irritation, and the attack is probably localised to the alimentary tract in that large majority of cases in which recovery ensues. The low death-rate (about 1 per cent.) in a disease of such severity is attributed by the authors to its causation by organisms of intense toxicity but low invasive power. The implication of the Salmonella group in the outbreaks following consumption of toxic canned foods where no organisms can be isolated is regarded as highly probable. The experimental evidence bearing upon this question is certainly suggestive, but Dr. SAVAGE and Mr. WHITE do not offer it as conclusive. Indeed, throughout the report the utmost care is taken not to claim too much from animal experimentation. But the fact that the authors have made and will shortly report detailed investigations, epidemiological and bacteriological, of 100 actual recent outbreaks of food poisoning in this country is sufficient guarantee that their laboratory experiments are only auxiliary to observations of disease in man, and it is mainly by such well-balanced combination of observation and experiment that modern epidemiology progresses.

[1] Medical Research Council, Special Report Series No. 91. H.M. Stationery Office. 3s. 6d.

SCIENCE AND GOVERNMENT.

THE group of photographs of medical Members of Parliament in THE LANCET of Feb. 7th recalls to a correspondent an interesting discussion in *Nature* (Jan. 3rd, 1925) of the part taken—or rather not taken—by scientific men in the government of modern countries. Dr. A. D. LITTLE had addressed the Franklin Institute in Philadelphia on the anomaly that, although all the distinctive features of modern civilisation are due to the discoveries made by scientific men, yet nowhere is the governing and directing power in their hands. The premise is obviously wrong; modern civilisation has its moral as well as its material victories, and if it consisted of nothing but aeroplanes and wireless it would not be much worth bothering about. But the fact is true enough, and at first sight it is perhaps rather surprising, though a little reflection suggests that such

an arrangement is not as undesirable as it appears. Treating the question empirically, the writer in *Nature* points out that in fact we have no clear evidence that the majority of scientific men would be of any particular use in the conduct of affairs, or that the views of the Royal Society on international politics are worthy of any special consideration; which leads him to the general conclusion that the scientist is best occupied by sticking to his own job. General considerations seem to indicate the same answer. The scientific habit of mind consists essentially in adding up facts correctly, in doing arithmetic with real numbers so to speak, and if public affairs had to deal with material of like kind scientific experience and training could not but be helpful. But governments rarely deal with facts, they have to cope with near-facts and ideals and emotions and aspirations, and if these can be reduced to an appearance of objective reality (as may be possible for example in economics) can the result be described as better than approximate? Affairs, in short, provide just the same kind of problems as does practical medicine. The difficulties of diagnosis and the obstacles to the evaluation of therapeutic procedures dealt with recently by Dr. E. BRAMWELL[1] arise mostly from the ill-defined numbers which the physician has to add up. When a doctor has to deal with 2 and 5 he has no more difficulty in adding them up to 7 than any ordinary man, as the neurologists have shown. But as a rule he has a figure supposed to be somewhere about 2 to relate to another which may be anything from 3 to 7 and it is little wonder if the answer is only right within about 100 per cent. He cannot treat the question algebraically, he cannot even use statistical arithmetic; his patient is a concrete individual. And the man of affairs and physician alike have another difficulty which the scientist never has to meet—they have to do something, and that without immoderate delay. In scientific questions the answer has necessarily to wait until there is reasonable surety about the numbers which have to be added up and the correctness of the addition; and as the result is a new piece of knowledge which no one can miss any more than they can miss tomorrow's breakfast, no one is particularly worried at the delay. But if the problems of unemployment were treated in the same way, and by men whose minds had been trained to work in that way, some dissatisfaction would probably result. The truth seems to be that these questions of government are on the whole best dealt with by persons who have improved by experience and practice a natural inclination to consider approximate data and to make clever, perhaps inspired, guesses at the number which results from the addition of x to y, or, when that is impossible, to select a range of numbers which we may call a compromise. Medical men occupy a peculiar position in having a scientific training which culminates in learning how to reach sound conclusions from very imperfect data. In many ways this is a singularly appropriate preparation for public affairs.

THE HEALTH OF THE KING.

THE KING has been during the week suffering from an attack of influenza of the respiratory type. The general condition is improving, but it is too soon to expect any change in the bronchitis. The official bulletins, signed by Sir STANLEY HEWETT, Sir MILSOM REES, and Lord DAWSON OF PENN are keeping the public informed of HIS MAJESTY'S progress.

[1] See THE LANCET, Feb. 7th, p. 265.

Annotations.

"Ne quid nimis."

SUBACUTE COMBINED DEGENERATION OF THE SPINAL CORD.

IT is now 25 years since Batten, Russell, and Collier gave the first general description of the nervous disease associated with pernicious anæmia, and a great deal of study has been devoted to the subject in the interval. The discussion which took place on Feb. 11th at the Neurological Section of the Royal Society of Medicine revealed the amount of work that is being done on it at present, and showed that some progress is being made in the fight. Dr. A. F. Hurst, who was the opening speaker, presented a very complete hypothesis of its ætiology. He first showed that the anæmia with which subacute combined degeneration of the cord had been associated in all the 21 cases of his series had been identical by every known test with that called Addison's or pernicious anæmia, and assuming that this was the anæmia invariably associated with subacute combined degeneration, he treated the ætiology of the two diseases together. The essential predisposing factor he believes to be absence of the hydrochloric acid of the gastric juice; if, in cases of achylia, oral or pharyngeal sepsis occurs, streptococci find their way down and implant themselves in the duodenum; there they develop their specific properties and produce two different toxins—a hæmolytic toxin and a neurotoxin—and according as one or the other of these is the more favoured by circumstances, pernicious anæmia or subacute combined degeneration dominates in the morbid state which ensues. Every step in this argument was supported by facts and figures. In pernicious anæmia and in subacute combined degeneration achylia has been found by Hurst and by Vanderhof and others in 100 per cent. of cases. That the achylia precedes the anæmia and the nervous disease, and is not merely an associated phenomenon due to the same cause, is indicated by several groups of facts; achylia has been found as much as 13 years before the onset of pernicious anæmia, and in other cases 12, 10 (twice), 7, and 6 years; pernicious anæmia has followed not only the common "constitutional" achylia, but also that produced by cancer of the stomach and gastrectomy; both pernicious anæmia and achylia may be familial and their association has been recorded in 15 different families; in one family the father had pernicious anæmia, and the three elder children, aged 10, 6, and 4 years, all had achylia; in another a woman and two of her daughters and a granddaughter all died of pernicious anæmia and the third daughter had achylia. The next step in Dr. Hurst's argument is supported by the presence of hæmolytic streptococci in the duodenum in cases of pernicious anæmia and of subacute combined degeneration; in 77 per cent. of a series of 42 such cases streptococci were obtained by means of the duodenal tube or by puncture of the duodenum at operation, while in 150 cases of various other diseases they were only obtained in 21 per cent.; the streptococci were hæmolytic in 17 out of the 19 cases of pernicious anæmia or subacute combined degeneration in which they were examined, and in the other two cases of subacute combined degeneration there was little anæmia; that these organisms gained entrance through the mouth does not need to be insisted on; glossitis was present in 85 per cent. of cases and pyorrhœa and tonsillitis were frequent.

Based on such evidence Dr. Hurst's theory cannot easily be gainsaid in regard to any case of subacute combined degeneration in which the anæmia is undoubtedly Addisonian. But other workers who are also seeing large numbers of cases have not had the same uniformity as Dr. Hurst in their findings. Dr. H. J. Macbride, who continued the discussion, gave an analysis of 199 cases collected by himself and

Dr. Carmichael from the National Hospital, Queen-square. In 40 cases, which they had personally observed during the last two years, free hydrochloric acid had been present in the gastric secretion in no less than 14, and of all the 199 cases only 26 per cent. gave a history of antecedent alimentary symptoms. Dr. Stanley Barnes, too, stated that free HCl had been found in nine of his 12 cases since 1922. Thus, in nearly half the cases of these two groups there had been no achylia. When we consider the great constancy with which achylia is found in pernicious anæmia (603 out of 613 collected cases in Hurst's table), it is open to grave doubt whether the anæmia in these other cases is the same entity as Addison's anæmia; there are some reasons for thinking that there may be another anæmia, closely allied to the true Addisonian but independent of achylia, and that either type may be associated with subacute combined degeneration of the spinal cord. Dr. Macbride and Dr. Carmichael, in a careful analysis of their cases, sought for other ætiological factors; they found in their patients a very high tolerance of thyroid, in some cases after death they found pathological changes in the testes, and they observed that in women subacute combined degeneration almost always came on at the menopause. They therefore suggest that endocrine disturbance may be an essential part of the disease. There was a general agreement on lines of treatment; hydrochloric acid to be given in large doses (ʒii.) before meals to all patients with achlorhydria, eradication of sepsis, autogenous vaccines, arsenic, by the mouth or intravenously (N.A.B.), and in some cases blood transfusion. Both Dr. Hurst and Dr. Charles Hunter were able to record in cases of subacute combined degeneration associated with true Addison's anæmia great prolongation of life and recovery for several years from the nervous symptoms—the most encouraging results yet obtained.

METHYLATED SPIRIT AND ITS SUBSTITUTES.

WE noted recently in these columns (THE LANCET, Jan. 24th, p. 193) the modifications in the composition of methylated spirit, and commented on the use of isopropyl alcohol as a substitute. We have recently received some American isopropyl alcohol made from petroleum by-products, and it appears to be of excellent quality and practically indistinguishable from that made from acetone. In view of its high purity it is not surprising to find that recent publications[1] concerning its pharmacology give entirely satisfactory reports, so that there need be no hesitation in using it in the same way as the product obtained from acetone. The toxicity is not less than and not more than twice that of ethyl alcohol. It is a more powerful bactericide and antiseptic than ethyl alcohol towards the organisms so far studied (*Staphylococcus pyogenes aureus, Bacillus coli communis, Bacillus anthracis, Bacillus subtilis*, and acetic acid bacteria). It is effective in lower concentrations than ethyl alcohol, the most effective being 30 to 50 per cent. The technical product contains 91 per cent. of the alcohol by volume and 9 per cent. of water, and has a boiling-point of 80·4° C. and a specific gravity of 0·820 at 15° C., and a density of 0·816 at 20° C. It is obtainable under the name of "Petrohol" at 38*s.* per gallon for single gallons. Industrial methylated spirit free from the harmful denaturants and colouring matter found in mineralised methylated spirits is now also available for medical and surgical purposes, permission having been given by the Board of Customs and Excise for the sale of such spirit suitably denatured. "Antiseptic Surgical Spirit, B.D.H.," sold by the British Drug Houses, is colourless and has a pleasant refreshing odour, and contains a reliable non-poisonous mild antiseptic, and no harmful ingredients. Some of the denaturant, however, is thrown out of solution on the addition of water. It appears to be well-suited for use as an evaporating cooling lotion in various forms of skin inflammation and for application to the skin for preventing bedsores. It is also recommended for cleaning and sterilising the skin preparatory to operations, and for sterilising surgical instruments, which it does not rust. It is obtainable at 10*s.* per gallon.

[1] D. H. Grant: Journal of Laboratory and Clinical Medicine, 1923, viii., 382; American Journal of Medical Sciences, 1923, clxvi., 261.

THE BICENTENARY OF GUY'S HOSPITAL.

Guy's Hospital, having reached the very respectable age of 200 years, during which period it has ministered to the afflicted with unceasing pains and care, the editors of *Guy's Hospital Gazette* have taken advantage of the occasion to issue a special number of their journal containing a short history of the hospital, together with an account of the various departments and societies which go to make up the hospital and its work. We congratulate them on the result of their labours, for the number forms a valuable record of a great and noble institution. The history of the hospital is given in an all too short paper by Sir William Hale-White, and the other contributions are all from the pen of experts in the particular subject in hand. There are many and varied illustrations which are all of interest, some of which, too, raise a smile by the quaintness to modern eyes of the dress, notably that of the group of nurses of 1865 and 1875. The proportionate space allotted to the various papers is justly spaced, except, to our minds, in one instance; the section given up to the hospital Rugby football club consists of 37 pages, while Sir William Hale-White's paper on the hospital's history only takes up 26. One of the most interesting articles is that dealing with the history of the Physical Society by Mr. J. M. H. Campbell, which contains, among other items, an exceedingly grisly story, the subject being hydrophobia. We are glad to note a panegyric upon that brilliant little journal the *Guyoscope*, now, alas, dormant. This special number is a happy thought and well carried out. The whole publication should be read by all laymen who take an interest in the well-being of their fellow creatures, for we expect that many of them have no idea of the manifold activities which go to make up the work of a hospital.

MOSQUITOES AND COCONUT PALMS.

THE breeding habits of mosquitoes have received a considerable amount of attention from medical officers, sanitarians, and entomologists for some time; but it will be news to many of them that several species breed commonly in the tops of coconut palms throughout East Africa. Dr. W. E. Haworth was acting as medical officer of health for the town and district of Tanga, Tanganyika Territory, in June, 1920, when he made this important discovery. It came about in this way. In spite of vigorous anti-mosquito measures it was noticed that the number of mosquitoes in the European houses of the town increased to an alarming degree, and that the insects for the most part were of the genus *Culex*, of which the corresponding larvæ could not be demonstrated in any surface water in the town at the time. These observations suggested that some uncontrolled breeding-place must exist, and suspicion fell on the tops of the coconut palms which adorn the picturesque town. An expert climber, one Sefu bin Mbwana, having been procured, he proceeded to climb the highest palms with ease by *walking* up the stem. Armed with a bottle and the hollow leaf-stalk of the pawpaw, he sucked the water which collects between the axil and the stem. In order to do so he had to sit astride the swaying leaf and force its stalk away from the stem—a highly sensational and perilous proceeding. In this manner no less than 10,382 palms were examined along the East African coast, at Kismayu, Lamu, Mombasa, Tanga, Zanzibar, Dar-es-Salaam, Mafia, Kilwa Kiswani, Lindi, and Mikidani. Twenty-seven species of mosquito were found breeding in palm water, including two species of *Anopheles*, 11 of *Aëdes*

(formerly *Stegomyia*) and a large number of *Culex* of various species. The predominating form of mosquito was not the same at all stations. At Tanga it was *Culex fatigans*; at Dar-es-Salaam *Aëdes* (*Stegomyia*) *argenteus*; possibly in some places the more dangerous malaria-carrying *Anopheles* may abound to the same degree. The number of mosquitoes proceeding from this source are most certainly a source of danger to the community. Granted even that only a few perfect insects emerge daily the total number thus produced must be a very considerable one when the number of palms, which may exceed 70,000 in one township area, is considered. What has been demonstrated[1] for one portion of East Africa probably holds true for all coconut-growing areas throughout the tropics, and the importance of this subject from a public health point of view can hardly be overestimated. Dr. Haworth is to be congratulated on a piece of work which suggests that the task of eradicating the mosquito in tropical districts is more difficult and complicated than has been apprehended. It must be a source of especial satisfaction to him that three handsome new species of the genus *Aëdes* have been discovered as the result of this investigation. Excellent figures of these three species—*A. haworthi*, *A. calceatus*, and *A. soleatus*—which are described and named by Mr. F. W. Edwards in an appendix, have been drawn by Mr. A. J. E. Terzi to illustrate Dr. Haworth's survey.

VOLUNTARY AID DETACHMENTS: PROGRESS OF THE SCHEME.

THE King has graciously permitted the Royal Crown to be included in the badge for mobile members of the Voluntary Aid Detachments. Already over 200 men's and women's detachments have been formed and received official recognition. These detachments have been raised by the St. John Ambulance Association, the British Red Cross Society, and the St. Andrew's Ambulance Association. County Controllers have been appointed in nearly every county in England, Scotland, and Wales, and a Scottish and a Welsh Committee have been formed with headquarters in Glasgow and Cardiff respectively. These Committees are responsible to the Central Joint Voluntary Aid Detachment Council for the administration of the new scheme in those areas. The scheme was evolved in 1923 out of war experiences, when it was decided to reconstitute the Central Joint Voluntary Aid Detachment Committee formed during the war to administer Voluntary Aid Detachments. As it now exists, the scheme is designed to supplement the Medical Services of the Naval, Military, and Air Forces on emergency in any part of the world, and the various Territorial Army Associations are responsible for the enrolment and organisation of V.A.D. members. Members are now being trained for eight days in Naval, Military, and Air Force hospitals, and "Training Regulations" have been issued and classes of instruction are being held in most centres and districts.

THE SERUM PROPHYLAXIS OF MUMPS.

ALTHOUGH mumps is not a severe disease in its typical form, outbreaks of this infection in institutions for children and aggregations of adolescents and adults may cause considerable inconvenience and loss of time to the individual and the community as a whole. Joseph C. Regan[2] has therefore made trial of prophylactic injections of convalescent serum, a method which has been employed with such striking results in the prevention of measles on the continent and in America, though it does not appear to have been much tried in this country. Six groups of children, amounting to 81 in all, who had been exposed to mumps at different times in the Kingston Avenue Hospital, Brooklyn, were injected with the serum of convalescents from the disease, the doses varying from 2 to 4 c.cm. The donors were healthy adults who gave a negative Wassermann reaction, were clinically free from any signs of active tuberculosis, and were between the tenth and twentieth, and usually between the fourteenth and sixteenth day of disease. Only one of the children so treated developed mumps, but it should be noted that 11 were discharged from observation before the incubation period was over, and their subsequent history was not known. Dr. Regan suggests that in order to modify the disease and particularly to avoid orchitis without preventing the occurrence of the disease altogether the serum should be injected late in the incubation stage and in somewhat larger doses than he has recommended for the other cases. A more lasting and possibly permanent immunity is conferred by an abortive attack of mumps, whereas the immunity afforded by early injection of the serum is only transient.

[1] Mosquitoes and Coconut Palms—A Mosquito Survey of Palm Trees in East Africa and the Problems Resulting Therefrom. By W. E. Haworth, M.B., C.M., B.Sc., Trans. Roy. Soc. Trop. Med. and Hyg., 1924, October, vol. xviii., No. 4, pp. 162–198.

[2] Journal of the American Medical Association, Jan. 24th, 1925.

CANCER RESEARCH BY THE GENERAL PRACTITIONER.

A MONOGRAPH published as a supplement to *Norsk Magazin for Laegevidenskaben* for December is an example of what a general practitioner may do as a research worker even in these days of laboratories and instruments of precision. The author, Dr. Just Thoner, has practised in a mountainous district in Norway (Gol and Hemsedal) from 1907 to 1921, and throughout this period he has consistently pursued certain investigations of cancer as it occurred in this remote district whose population has been remarkably stationary. Dr. Thoner made himself familiar with the family history of every home in the two parishes in which he worked, and he collected 120 cases of cancer occurring in the period 1902–21 in an area with an average population of 3679. Of the 120 cases, as many as 73 were males, and the site of the cancer was the alimentary tract in 61 per cent. of the total. There was only one case of carcinoma of the uterus, but as great a proportion as 14 per cent. of the total were cases of sarcoma. About 50 per cent. of the cancers occurred between the ages of 60 and 80 years, and after the age of 80 there were hardly any such cases, and it would seem that, in this country district, cancer is not so much a disease of advanced age as of "incipient senility." External causes seemed to have played a part in 42 per cent., trauma alone in 19·5 per cent. of all the cases. Cancer affecting both husband and wife was observed in only 5 to 6 per cent. of the married patients, and the interval between the cancers of the husband and wife was often long—up to 25 years. Even in the homes where a cancer was associated with a profuse discharge, and cleanliness was conspicuous by its absence, it was rare to find an accumulation of cases within a short period, and Dr. Thoner concludes that "the transference of cancer from one individual to another must be rather rare if taking place at all. . . ." With regard to the influence of heredity, Dr. Thoner was able, thanks to the stationary and rural character of his material, to show that, in comparison with tuberculosis and insanity, cancer certainly does not seem to show a marked preference for certain families. But his investigation of the records of five "cancer families" showed that, if only the deaths over 35 be considered, the cancer incidence of these families was 18·2 per cent., as compared with 12·1 per cent. for the total population. Many other interesting facts, such as the geological formation of the districts concerned, the changes in the diet of the population during the past century, and the character of the daily life led by this comparatively isolated community, are discussed by Dr. Thoner, whose work has been financed by the Elizabeth and Knut Knutsen's Fund for Cancer Research. Included in his 155-page monograph is a summary in English. It is to be

hoped that the example set by Dr. Thoner will be followed by others, and that work of this kind will not be financially starved on the assumption that research is a monopoly of the laboratory.

THE IRISH FREE STATE AND THE MEDICAL REGISTER.

THE Senate of the Irish Free State recently passed the Medical Bill, dealing with the maintenance of the Medical Register, through all its stages, and the Bill has now become law. The Bill authorises the General Council of Medical Education and Registration to continue to exercise authority in respect of medical practitioners in the Irish Free State. Persons registered under the Medical Acts are, in the Free State, to have the same rights, privileges, and immunities, and be subject to the same obligations as in Ireland before the Free State came into existence. The General Council is to have, in relation to persons and matters in the Free State, all the old powers, jurisdictions, and authorities; the Branch Council for Ireland will similarly retain its powers; the General Council and the Branch Council will continue to be constituted and elected as before; and Universities and medical corporations in the Free State continue to have powers of granting diplomas and holding qualifying examinations under the Medical Acts. The Bill is for the period of one year. Mr. McGilligan, Minister for Industry and Commerce, who was in charge of the Bill, stated that prolonged negotiations had taken place between the British and Irish Governments in reference to some points in dispute. For the next 12 months, however, the position of medical men qualified in the Free State is assured, in that they will continue to enjoy equal privileges with their colleagues in the United Kingdom and Northern Ireland.

THE DANGERS OF EARTHENWARE COOKING UTENSILS.

A VARIETY of types of saucepans, frying pans, and casseroles have been recommended from time to time by health enthusiasts, but the dangers of each have been unmasked by a relentless series of chemical investigations. Thus enamel vessels have been condemned because it has been stated that such lesions as appendicitis may result from the swallowing of small pieces of dislodged enamel. Nickel-lined utensils have also been included[1] in the danger list, since, although stable to alkaline fluids, they are unsuitable for acid foods, such as stewed fruits and the like. Aluminium[2] and zinc[3] containing alloys have also proved to be unsuitable for the manufacture of cooking utensils. Iron and steel rust, and consequently earthenware goods have been looked upon as a last resort, and have, up to the present, been regarded as being safe. A report just issued by the Ministry of Health (Reports on Public Health and Medical Subjects, No. 29)[4] proves conclusively that we must inquire carefully into the history and birthplace even of our casseroles and earthenware vessels before entrusting our meals to them. In this report Dr. G. W. Monier-Williams calls attention to the danger of absorbing noxious substances from the glaze of these articles. The report, which, although highly technical, is extremely interesting, commences with a brief outline of investigations already performed upon the question of lead poisoning arising in connexion with lead glazing. As Dr. Monier-Williams points out, practically all these investigations were conducted from the point of view of danger to the workers during the actual process. Briefly, the process consists in "fritting," or fusing a mixture of red lead, clay, ground flint, and washing soda in a kiln. A mass of lead silicates is thus produced. The "fritt" is then ground up and suspended in water in which the vessels to be glazed are dipped. The vessel is then baked at a high temperature in order to produce a uniform glossy surface. As early as 1887 the Germans realised that such glaze might liberate lead if boiled with acid solutions, and they laid down a law that condemned any cooking vessel yielding lead on boiling with 4 per cent. acetic acid. The object of Dr. Monier-Williams's researches was to reinvestigate those problems, and to determine the stability of glazed articles to ordinary cooking processes. His results may be summarised by stating that certain wares do give off lead, arsenic, and other toxic substances when submitted to the ordinary cooking processes, and that consequently they are a source of danger. We gather from the report that the most unsuitable articles come from abroad, or from the smaller English potteries.

The question naturally arises as to what sort of cooking utensil really is safe. In view of the unsuitability of most ordinary materials, a new form of extravagance in the shape of platinum-lined casseroles suggests itself for delicate millionaires.

[1] THE LANCET, 1924, ii., 339.
[2] Ibid., 1913, i., 54.
[3] Ibid., 1923, i., 242.
[4] Reports on Public Health and Medical Subjects, No. 29. The Solubility of Glazes and Enamels Used in Cooking Utensils. By G. W. Monier-Williams, M.A., Ph.D., F.I.C. London: H.M. Stationery Office. 1925. 6d.

THE zeal inspired by Sir James Mackenzie will not cease with his death. It would be unfortunate indeed if the work which he initiated at St. Andrews should have to be discontinued through lack of funds, especially since the ultimate value of observations by a group of practitioners must depend largely on the length of time covered by their records. A suggestion that a fitting tribute to his memory would be the endowment of the Institute founded by him at St. Andrews is likely to receive cordial support. We understand that £60,000 is the minimum sum required if the James Mackenzie Institute for Clinical Research, St. Andrews, as it is now to be called, is to be put on a sound financial basis. Of this sum £7000 has already been collected. Donations should be sent to the hon. treasurer of the Institute, Commercial Bank, St. Andrews.

INTERNATIONAL CONGRESS OF THALASSOTHERAPY.—The fourth International Congress of Thalassotherapy will be held at Arcachon, near Bordeaux, from April 27th to 29th. The Association of Thalassotherapy (treatment of disease by a residence at the seashore, by sea-bathing, or by a sea-voyage) was founded by Prof. Verneuil, of Paris, at the International Congress at Boulogne in 1895. The President of the Association was for many years Prof. Albert Robin, of Paris, Member of the Academy of Medicine, and the presidency is now held by Prof. Gilbert, of the Paris Faculty of Medicine and a Member of the Academy of Medicine. The Association is managed by a permanent bureau with its office in Paris. This permanent bureau, together with the national committees of each country, organises the international congresses. Among the French Committee are many well-known names, such as Prof. D'Arsonval, Prof. Marfan, Prof. Pinard, and Prof. Roger, Dean of the Faculty of Medicine of Paris. Dr. Robert Pierret has been elected liaison secretary to assist the work of the British Committee, among whose members are Sir Dyce Duckworth, Sir Humphry Rolleston, and Sir StClair Thomson (President of the British Committee), and Dr. Campbell McClure (secretary). The question to be discussed at the forthcoming International Congress is the Marine Treatment of Rickets. The speakers from Great Britain will include Prof. Leonard Hill and Dr. P. L. Webster, and delegates from France, Italy, Belgium, and other countries will also contribute papers to the discussion. The Association is composed of titular and adhering members and the subscription for the Congress is fixed at 50 French francs for the titular members and 30 francs for the adhering members. Special facilities for accommodation at Arcachon have been secured at reasonable rates. All the members who intend to be present at the Congress are requested to write to Dr. Pierret, 7 bis, Rue Raynouard, Paris (16e) from whom further information may be obtained.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

IX.—THE TREATMENT OF TWO CHRONIC SKIN DISEASES.

II.—ACNE VULGARIS.

Acne vulgaris is sometimes regarded as a trivial complaint which will right itself as the patient gets older. But it is a disfigurement even in its mildest forms and may if neglected take on a more serious aspect. It may last over a number of years and lead to permanent scarring. It should, therefore, never be left to take its own course in the hope that it will eventually clear up without treatment. Acne vulgaris is a disease of puberty and of early adult life. Its essential feature is the comedo or "black-head," without which there cannot be acne. The comedo was supposed formerly to be due to a blocking of the mouth of the pilo-sebaceous follicle by dried sebum and immature hairs. It is really a dense mass of acne bacilli enclosed in a sheath of horny epithelial cells which have been thrown out by the epidermis as a protection against the bacillus. The acne bacillus is not found on the skin until puberty, and the theory which best explains its presence at puberty is that the sebaceous glands then become more active and thus form a suitable soil for the acne bacillus which flourishes on an oily skin. Greasiness of the skin in the areas affected is an early and constant feature of acne. When only the oily skin and the black-heads are present we have "acne punctata." A further stage is presence of papules and of papulo-pustules. Each papule or papulo-pustule is formed around a comedo, and is due to a secondary infection by the *Staphylococcus epidermis albus*, or more virulent forms in more severe cases.

It will thus be seen that the rational treatment of acne is to begin in the earliest stages to try to control the oily state of the skin and to remove the colonies of acne bacillus from the mouths of the follicles. In most cases the time-honoured method of soap and hot water and sulphur lotion is successful if carried out thoroughly and with perseverance over weeks or months. The face should be soaped every evening, for two or three minutes by the clock, using a face towel or a shaving brush. It should then be bathed with hot water and a sulphur lotion rubbed on with a piece of absorbent wool and allowed to dry on. When the skin gets a little rough and sore the treatment should not be discontinued but should be merely omitted for a few evenings and glycerine of starch applied at bed-time. It is sometimes advised that the comedones should be expressed, but this should never be done by the patient and, if at all, only by the medical man. An ordinary toilet-soap may be used for the soaping or a sulphur soap. A suitable sulphur lotion is:—

℞	Sulphur precip.	oz. ½.
	Glycerini	dr. 2.
	Tinct. quillaiæ	oz. ½.
	Spirit. coloniensis	dr. 1.
	Aq. destil.	ad oz. 6.

In cases where there are papules and pustules the same treatment may be employed, with the addition that any pustule should be broken with a pointed match stick dipped in tinct. iodi before using the soap and sulphur lotion. Where there is much pustulation a sulphur and resorcin paste may be applied at bed-time instead of a sulphur lotion, thus:—

℞	Sulphur	gr. 15.
	Resorcin	gr. 10.
	Pulv. amyli	dr. 3.
	Vaseline	ad oz. 1.

Internal Medication.

Although acne vulgaris appears to be due to an external infection and there is really no evidence that an internal cause has to do with its origin, it is generally taught that anæmia, constipation, indigestion, or improper feeding are important factors, and arsenic or iron tonics and saline aperients are often prescribed. A favourite mixture is the classical Startin's mixture of iron, magnesium sulphate, and acid sulphuric. Calcium sulphide may be given internally, gr. ¼–½, with the view to control suppuration, or some preparation of yeast with the same object. But reliance cannot be placed upon these internal remedies, and vigorous and persevering external treatment must not be neglected with the hope of curing by more general measures.

Associated Seborrhœa Capitis.

An important practical point is that most cases of acne are associated with seborrhœa capitis, with greasy scales and sometimes loss of hair. The acne bacillus is found in the scales and it is probable that continued infection of the face may take place from the scalp. To overcome this condition the head should be shampooed once a week with a spirit soap as follows:—

℞	Saponis kalini	oz. 3.
	Spirit. vini meth. vel rect.	oz. 1½.
	Spirit. lavandulæ	dr. ½.
	Aq. dest.	ad oz. 6.

The head is made wet with warm water and lathered with ordinary toilet-soap. A few teaspoonfuls of the soap solution are then poured on to the scalp and the lathering continued for several minutes, and the lather is then rinsed off with clean water.

Of recent years two new methods of treating acne have been employed—namely, vaccine treatment and X ray treatment.

Vaccine-Therapy.

Vaccine treatment of acne, although occasionally very successful, is uncertain in its results, so that one may hesitate to prescribe what must be a long course of treatment without any assurance of a good result. It is seldom, if ever, successful in acne punctata, and even where there is pustulation it frequently fails. It is, therefore, rather a remedy to use as a last resort or in addition to other measures than as a routine. Autogenous vaccines are more likely to succeed than stock vaccines.

X Rays.

In X rays we have a very valuable addition to our methods of treatment. It is always of great assistance, and, generally, very successful in at once clearing up the eruption or of considerably shortening its duration. It is sometimes avoided as a dangerous remedy, and it is so if not carefully applied; but with proper precautions it is entirely free from any risk of damage to the skin. This does not imply that any medical man who employs an X ray apparatus, however skilful he may be in radiographic work, is necessarily competent to treat safely a case of acne by X rays. He must have also experience in therapeutic dosage. Probably those only who have experience in the treatment of ringworm by X rays are able to appreciate fully the true meaning of an accurate dose; and there are many radiologists throughout the country who have now had this experience at the numerous ringworm treatment centres. X ray treatment may be employed even in quite early cases of acne punctata, and with excellent results. In more advanced pustulating acne, X ray treatment always shortens the cure. In cases of acne indurata with deep-seated indurations and pustules, no other treatment is so successful. In regard to the manner of application of the X rays there is a difference of opinion. Some prefer to give repeated small doses, others larger doses less often. But since there is no improvement

until by repeated small doses we reach by their cumulative effect that of a large dose, it is really safer to employ the larger dose at once, because it can be more accurately measured than can the cumulative effect of many small doses. A dose which is quite free from danger is a 2/3 Sabouraud pastille dose, and this may be safely repeated in three weeks, and after the second dose, at intervals of four weeks. In order to expose the whole face three doses are given, one to the forehead and one to each cheek. The hair at the scalp margin and the orbits, including the eyebrows, are covered with thin lead shield protections. Improvement is seen in from ten days to three weeks after each application. In some cases one or two applications are sufficient; in others, the treatment must be continued at intervals of four weeks or longer, sometimes for many months. Where in spite of a general improvement, fresh pustules continue to appear, we may supplement the treatment by a course of autogenous vaccines. Acne of the back and shoulders or chest may receive the same treatments as acne of the face.

Acné Excoriée.

It has already been mentioned that scarring is a common sequel of pustular acne. The patient should be warned of this lest the treatment by X rays or by other methods be afterwards blamed for the scarring. Scarring, sometimes quite extensive, may be produced in another way than by the healing of pustules. A patient who has acne and particularly a female patient, may acquire a habit of squeezing, pinching, or tearing with the nail every little acne spot, and may sometimes spend much time in front of a looking-glass performing this operation. Eventually, it may happen that even in slight cases this pinching, squeezing, and scratching becomes an almost unconscious habit which continues for long after there have ceased to be acne spots. Each erosion so produced not only causes present disfigurement but subsequent scarring. Such cases have been called by French writers "acné excoriée," and in cases of acne in a girl or young woman which seems to resist all treatment this cause should be considered. It will often be found that there is really no acne—no comedones and no papulo-pustules—but only dug-out excoriations and scars. In such cases it is generally merely necessary to convince the patient that the lesions are entirely due to her own interference and that she has only to refrain from touching her face with her fingers in order soon to bring about a cessation of the supposed acne eruption.

H. G. ADAMSON, M.D., F.R.C.P. Lond.,
Physician for Diseases of the Skin, St. Bartholomew's Hospital, London.

THE Minister of Health has appointed Mr. Howell E. James, senior assistant secretary, Welsh Board of Health, to be secretary of the Board in succession to Mr. Percy E. Watkins, who has been appointed permanent secretary of the Welsh Department of the Board of Education from April 1st, 1925.

EUGENICS EDUCATION SOCIETY.—A lecture on Mate Selection in Primitive Society will be delivered by Mr. B. Malinowski, D.Sc., at the rooms of the Royal Society, Burlington House, Piccadilly, London, W., on Feb. 27th, at 8.30 P.M. Major Leonard Darwin will preside. All interested in the subject are invited to attend.

ROMFORD AND DISTRICT MEDICAL SOCIETY.—The first annual dinner of this new society was held at the White Hall Hotel, Romford, recently and was presided over by the President, Dr. J. H. Bletsoe. The society has already a substantial membership and the Romford Board of Guardians have granted the use of their board room for the meetings, which are to be held bi-monthly. At the annual dinner the guest of the evening was Sir John Bland-Sutton, who replied to the toast of "The Visitors," submitted by Dr. Charles D. Green, one of the oldest medical practitioners in the district. The Vicar of Romford, Rev. H. C. Robins, replied for the lay visitors. The toast of "The Society" was proposed by Mr. Alan Todd, and suitably acknowledged by the President.

Special Articles.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

HUNTERIAN FESTIVAL DINNER.

FOLLOWING the delivery in the afternoon on Saturday last, Feb. 14th, by Sir D'Arcy Power, of the Hunterian Oration, the Hunterian Festival Dinner was held at the Royal College of Surgeons of England, Sir John Bland-Sutton, the President, presiding. The following were present:—

Mr. J. H. Whitley (Speaker of the House of Commons), Lord Hewart (Lord Chief Justice of England), Sir Charles Sherrington (President of the Royal Society), Sir Frank Dicksee (President of the Royal Academy, Mr. Raymond Apperly, Mr. S. G. Asher, Sir James Atkin, Dr. Andrew Balfour, Mr. Sheriff Barthorpe, Mr. James Berry, Sir John Bland-Sutton, Sir Anthony Bowlby, Sir William Bragg, Dr. A. D. Brenchley, Mr. R. H. Burne, Viscount Burnham; Mr. Alastair Cameron, Mr. H. S. Clogg, Sir Frank Colyer, Mr. S. F. Cowell; Earl of Desart, Mr. Sheriff Downer, Sir Frank Dyson; Mr. W. McAdam Eccles; Mr. C. H. Fagge, Mr. J. Herbert Fisher, Dr. H. Morley Fletcher, Maj. Stanley Flower; Sir Archibald Garrod, Mr. G. E. Gask, Sir Rickman Godlee, Lt.-Gen. Sir John Goodwin, Sir Charles Gordon-Watson, Mr. Justice Greer, Mr. H. A. Gwynne; Mr. J. Basil Hall, Mr. F. G. Hallett, Mr. W. Sampson Handley, Sir Robett Hudson; Mr. R. Johnson; Sir Arthur Keith, Mr. Rudyard Kipling; Mr. T. W. P. Lawrence, Mr. T. P. Legg, Lt.-Gen. Sir William Leishman, Mr. H. Lett; Mr. V. Warren Low, Sir Richard Luce; Sir George Makins, Merchant Taylors' Company, Sir Henry Morris, Sir Berkeley Moynihan, Sir David Murray, Mr. J. Murray; Rev. J. A. Nairn, Sir George Newman; Mr. J. L. Payne, Sir Edward Pearson, Mr. H. S. Pendlebury, Mr. V. G. Plarr, Sir D'Arcy Power, Squadron Leader D'Arcy Power, Press Association; Mr. L. B. Rawling, Sir A. W. Renton, Lord Riddell, Sir Humphry Rolleston, Mr. R. P. Rowlands; Dean of St. Paul's, Salters' Company, Col. H. S. Sankey, Mr. Percy Sargent, Mr. James Sherren, Col. T. Sinclair, Mr. W. G. Spencer, Mr. E. Sprawson, Sir Squire Sprigge, Lord Stanmore, Mr. F. J. Steward, Sir Charters Symonds; Prof. A. Thomson, Sir StClair Thomson; Sir Cuthbert Wallace, Sir Holburt Waring, Mr. A. E. Webb-Johnson, Sir Dawson Williams, Prof. William Wright.

At the close of dinner the President proposed The Memory of John Hunter, when the toast was drunk standing and in solemn silence.

The Lord Chief Justice proposed the Royal College of Surgeons and claimed that nothing could possibly exceed the debt which man owed to surgery and to law. In some humorous musings upon the comparative antiquity of the two professions he said that, if medicine could be called as old as the first baby, the law might well be older, for it might be that in the Garden of Eden, before the first medical interference had been necessitated, questions had arisen concerning the law of husband and wife or landlord and tenant. He indicated one great difference between the professional life of the lawyer and that of the surgeon, which was that the lawyer was not suddenly called upon in a case which seemed likely to be fatal to do the best that he could on the spur of the moment with the knowledge that death might follow and, it would seem, with the risk that he might be prosecuted for negligence.

Sir John Bland-Sutton, in acknowledging the toast of the College, said that the nexus between the profession which the surgeons humbly followed and that which Lord Hewart so eminently adorned was, from the surgeon's point of view, as direct as the hangman's rope, explaining his reference by the well-known fact that in years gone by the satisfaction of justice provided the anatomical subjects for the London schools. The President then brought to the attention of the audience the deep interest which Hunter had taken in bones and teeth, and mentioned that Hunter's first book dealt with the natural history of the human teeth and was written, according to report, in order to defray the expenses of his wedding

Sir Holburt Waring proposed the toast of the guests, reminding them of the personality of Martin van Butchell, whose caricature they had seen in Beaumont's sketches, and whose mummified wife was in the College Museum. He coupled with the toast the Speaker of the House of Commons.

The Speaker suggested in reply that his presence at a dinner of surgeons might be due to a conspiracy, for he knew that there were some 600 Members of the House of Commons who would like to have an operation performed on his eye. But if any such operation were contemplated he thought that there might be difficulties, because each of the 600 Members would demand that the organ should be made to point in a different direction.

The Rev. Dr. Nairn, Headmaster of the Merchant Taylors' School, proposed the health of the Hunterian Orator, explaining that he did so from the point of view of personal regard as well as from that of admiration of the Orator's talents, as not only was Sir D'Arcy Power educated at the Merchant Taylors' School, but he had sent two of his sons to follow him at that institution. Sir D'Arcy Power, having briefly replied, the company were invited by the President to visit the various departments of the College, where great interest was expressed in a new portrait lent for the occasion by Mr. Buckston Browne.

A New Portrait of Hunter?

The portrait is attributed, probably with good reason, to Gainsborough. This is a John Hunter entirely different from the dreamy and noble portrait by Reynolds, or from the pawky but admittedly excellent profile by Holland, yet strikingly like the Hunter in a brown coat hanging in the outer hall of the Royal College of Surgeons of England. The upper part of the face, with slightly tilted left eyebrow, and tilted leftward more in the alleged Gainsborough, is fairly identical with the same feature in the brown Hunter. The right eye in each portrait shows a slight squint. The brown Hunter has a keen brown eye, the Gainsborough a dull grey eye. Moreover, the lower part of the Gainsborough face is full; nothing suggests the concave conformation of the jaw. Have we indeed here a portrait of John Hunter, physician, the great Hunter's contemporary, known for his excellent treatise on anthropology and his books on military hygiene in Jamaica? The Gainsborough man points at the skull of a great ape, but Doctor John Hunter as an anthropologist might have done so, quite as much as John the surgeon.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

THE PROVISION OF MEDICAL BENEFIT.

Evidence by Mr. Brock and Dr. Smith Whitaker (continued).

Records of Illness.

(App. C. 71–81.) The form of record of illness which every insurance doctor is now required to keep is based on the recommendation of a Departmental Committee presided over by Sir Humphry Rolleston. It provides for a continuous record of an insured person's sickness and is passed, when he removes, to the doctor in his new district. (Q. 1214, 1215.) The Committee considered that the object of helping the doctor in the treatment of a case was paramount, but the record is also intended to serve useful statistical purposes. It has never been considered that it would be possible, consistently with having a continuous record kept by the doctor, to gather up all the records periodically and make a general statistical analysis, but sample investigations are possible, and to some small extent—up to the present—this has been done.

(Q. 1243.) In reply to a question it was stated that officers of the Ministry could, if required, make a limited investigation for the purposes—e.g., of the Industrial Research Board. A further question related to the possibility of a limited number of doctors keeping fuller records for the purposes of a special investigation. As to this, it was stated:—

(Q. 1288.) We derived some assistance of that kind in the Rheumatism Inquiry. There was very little satisfactory information as to the existence of different types of rheumatism, and, guided by the way in which the records were kept, practitioners were selected whom we could regard as reliable men to keep a special record with regard to rheumatism. Forms were issued to them and they kept a record of all cases treated within twelve months of any kind of condition that might broadly be called rheumatic. Those returns were of great value.

How the Records are Being Kept.

(Q. 1282.) When the present records were first started some difficulties were experienced in getting them properly kept; these difficulties were attributed by the witnesses to inexperience, to the agitation by some people against the records, which prejudiced the doctors against them, and to the natural reluctance of most medical men to do any clerical work that they can avoid. (Q. 1285.) The regional medical officers of the Ministry, who have the duty of examining records, all report a changed attitude on the part of the general body of practitioners towards the records. A large number of doctors say that they find the records helpful both in the treatment of cases which have been in their hands all through and in the treatment of cases that come to them from other doctors.

Size of Doctor's List—Number of Services Rendered.

(Q. 1219–1225.) The witnesses were asked to say on the basis of a list of 2500 insured persons how many patients a doctor would see in the course of a day's work. They said that on the 1923 figures it was found that a doctor saw about 50 per cent. of the persons on his list. On the average, actual patients are seen seven times, so that the doctor has to render 3·5 services per annum for each person on his list. With a list of 2500, this works out at about 29 services a day. Of these 29 services, probably eight in an urban area would be domiciliary visits; the remaining 21 would be surgery attendances. Taking a normal urban practice a doctor could do between three and four visits an hour. As regards surgery attendance, of those 21 persons attending at the surgery on the average, only three are coming for the first time, and, therefore, may be expected to require a fairly careful examination; the remainder are coming back either to report progress, or to ask for another bottle of medicine, or to obtain a sickness certificate, and those cases can be worked off pretty rapidly. If an hour is allowed for the three new cases, the others could probably be worked off at nine or ten to the hour. These are average figures, and only true of urban areas. In rural areas the proportion of visits to attendances is quite different.

The following figures as to the sizes of lists in England and Wales are of interest—35 per cent. of the total have lists of 600 or under, 30 per cent. have from 600 to 1200, 21 per cent. have from 1200 to 2000, and only 14 per cent. have more than 2000. Of that 14 per cent. a majority, probably the great majority, would be men who employ an assistant. As a broad generalisation, it was stated that the doctor with a big list was the subject of fewer complaints than the doctor with a small list.

Prescribing and Dispensing.

(Q. 1311.) The Acts provide that insured persons are entitled to "proper and sufficient medicines." The questions that have arisen have turned partly on whether particular substances were or were not medicines. Questions of this kind are those in which

* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6). References to the official statement which has been issued as an appendix in four sections are given thus: Section A, para. 69, is shown as "App. A. 69," and references to the oral evidence thus—Q. 1369.

common sense seems to meet the matter completely. No such cases under the Act have been put to formal test. The bulk of the questions that arise, however, are those under the Regulations relating to excessive prescribing. (Q. 1333.) The department has never at any time attempted to dictate to doctors what they should or should not order. The question has always been referred, in the first instance, to the local Panel Committee, and it is they who have considered as a medical question whether the things ordered in a particular case did or did not exceed what was reasonably necessary for treatment. If the doctor was not satisfied with the decision of the Insurance Committee, based on that expression of opinion by the Panel Committee, he had a right of appeal to the Ministry.

In order to reduce the number of cases arising for formal investigation, and to examine the general causes for the recent large increase in expenditure on drugs for insured persons, the Ministry has been engaged through its officers in an investigation. (Q. 1316.) No disciplinary action, however, has been taken under the new arrangement. It has been thought more expedient to begin by a comprehensive investigation of the causes of high cost, and the regional medical officers are only employed at present in interviewing the doctors and ascertaining from them the reasons for prescribing of which the cost appears high.

Authority for the Regulations.

(Q. 1392.) The powers of the Commissioners to make regulations to check excessive prescribing were tested in the courts as early as 1915, and the regulations were held by Mr. Justice Rowlatt to be within the powers conferred on the Commissioners. The judge stated that:—

> Experience shows that to carry out the Act you must have some check on extravagance, and that is what this rule was made for. In effect it says that if a doctor prescribes what is extravagant he must pay for it himself. . . . An Act of this kind ought to be construed liberally. The difficulties which emerge in the administration of an Act of this character are exceptionally great, and I ought to look at it in a practical way and construe the power with liberality. The making of this regulation, which certainly is a most beneficial one if properly administered, is well within the powers conferred by the Act.

Panel Drugs Not Inferior.

(Q. 1333.) On the question whether there was ground for the suggestion that insured persons were supplied with inferior medicines, the witnesses said there was no foundation at all for it. The department has repeatedly drawn attention to the fact that all drugs and appliances should be made available to insured persons which, on a liberal view, may be considered to be reasonably necessary for the efficient treatment of sick persons, and that full scope should be afforded for the exercise by practitioners of proper independence of judgment in the treatment of their patients. In a circular of May, 1924, the Minister deprecated any cheese-paring economy or the stereotyping of methods of prescribing, while at the same time pointing out the importance of avoiding waste and extravagance.

(Q. 1353–5.) As to stock mixtures, most Panel Committees now draw up formulæ of preparations that they believe the doctors will frequently want to supply, and which are not likely to deteriorate with keeping if made up in bulk; and chemists are encouraged to keep those ready made up in stock for reasons of economy. This has given rise to the suggestion, quite unfounded, that insured persons are less well treated than private patients. It is a practice probably adopted in every hospital in the country and by all private practitioners who do their own dispensing.

(Q. 1339–46.) With regard to the chemists, purchases have been made from time to time with test prescriptions and analyses made. This action, however, has not been as systematic and widespread as it might have been, and the department now has under consideration with the Retail Pharmacists' Union a uniform system of investigation throughout the country.

A Limited List of Appliances.

(Q. 1312–1332.) The Acts provide that only such appliances are to be supplied as the department may prescribe by regulation. Such common appliances as spectacles, trusses, and artificial limbs are not included in the list, and the evidence goes to show that the main ground for limiting the list is the ground of cost, but also that a distinction would appear to have been drawn between things which are required in order to enable the process of medical treatment to be properly carried out and things which are required to remedy physical impairments in every-day life.

Special Arrangements for Obtaining Medical Treatment.

Very few questions were asked as to the system under which certain persons may make their own arrangements for getting treatment instead of getting it under the panel system, or as to the arrangements for getting treatment through certain approved institutions. (Q. 1375.) With regard to the first class it was stated that there was no considerable demand at the present time by insured persons to be allowed to make their own arrangements and to receive a contribution towards the cost. The main deterrent is probably the fact that the insured person may have to pay some part of his doctor's bill himself. (Q. 1379.) As to the approved institutions, it was felt that the arrangements for the investigation of complaints have not been generally satisfactory, and that some institutions have been very lax in inquiring into complaints.

Payments to Doctors.

(App. C. 125.) The Minister, after consultation with the Government Actuary, determines for each year, partly on the basis of the number of insurance stamps sold, together with any other information available, the number of insured persons in the country who would be entitled to medical benefit in that year. This number, multiplied by the agreed capitation fee, makes a central pool. The distribution of this central pool among Insurance Committees is made by the Minister after considering the recommendations of a Committee, called the Distribution Committee, set up for this purpose. The insurance practitioners are represented on this Committee. The sum allotted to each Insurance Committee area is divided locally among the doctors in such way as they themselves determine. The almost universal system is the capitation system—that is, a distribution according to the number of persons on each doctor's list. (Q. 1383.) In Manchester and Salford the distribution is on the basis of the number of services rendered, but the doctors themselves have had to devise so many checks and safeguards against the risk of unnecessary attendances that by now the result differs very little from the capitation system. It has probably survived hitherto because of the strong feeling in both those cities in favour of free choice of doctor by the patient at any time. Now that free choice at any time is allowable everywhere, it is probably only a question of time for payment by attendance to disappear both in Manchester and Salford.

The central pool for the whole country is itself based on a capitation payment as stated. (Q. 1412–14.) This has varied from 7*s.* a head of the insured population at the beginning, up to a maximum of 11*s.* in 1920, falling to 9*s.* 6*d.* in 1922, and then in 1924 to its present figure of 9*s.* (Q. 1388.) The witnesses were asked what was the equivalent of the 9*s.* expressed in terms of services rendered. They stated in reply that it was calculated that the average payment per service was about 2*s.* 7*d.* Stated otherwise, it worked out at 2*s.* 3*d.* per surgery attendance and 3*s.* 4½*d.* for each domiciliary visit. These figures, it was suggested—

> would compare very favourably with the return from private practice among comparable classes, when you allow for the fact that, in the case of the insurance payment, it is a net

payment. There is no cost of collection and there are no bad debts. There is also the important difference that the doctor does not dispense for his insurance patient, whereas in industrial practice he ordinarily has to provide medicine for his private patient, and his fee in the case of the private patient, therefore, covers that as well as the attendance.

Persons Who Do Not Choose a Doctor.

The number of persons for whom the doctors collectively are paid depends, it will be seen, upon an estimate of the whole insured population made by the Government Actuary, and not on the number who actually get on to doctors' lists. (Q. 1452.) The doctors are paid for all such persons because they are at risk in respect of them, and have to give them treatment when they fall ill. For this reason no great importance is attached to the question of the actual number of such persons, which probably corresponds very closely with the number of fresh persons (about half a million) entering insurance each year. In the case of younger entrants particularly there is a tendency not to take any steps in the direction of getting on the list of a doctor until his services are needed.

Mileage Payment for Country Doctors.

(Q. 1463.) I see that the mileage grants have increased from £26,000 for England in 1913 to £250,000 in 1924, though apparently the latter figure covers Wales also. Can you indicate why such a large increase was made?—A. Because the whole basis on which mileage was calculated had to be revised. We started on the assumption that it was only necessary to make provision for areas of very special sparsity and difficulties of locomotion. . . . It was agreed at the beginning of 1920 that a mileage fund should be set up in order to pay the rural practitioner both for his expense in getting to the patient and also for the time spent in travelling over and above the time that would on the average be spent by the town doctor. The mileage fund, as from the beginning of 1920, had therefore to provide additional payments for all rural practitioners, and not only, as in 1913, for those practising in exceptionally difficult districts.

(Q. 1465.) In the distribution of the Central Mileage Fund between areas the Minister has the advice of the Distribution Committee referred to above. The distribution of the local pool is based mainly on the number of persons on the lists of the doctors who claim mileage, and their distances from those doctors, with extra provisions for areas in which there are special difficulties—for example, where a man lives in the middle of a moor and has to be reached by footpath instead of by car.

Town v. *Country.*

(Q. 1514–17.) Questions elicited the general view from the witnesses that the town doctor has profited more by the Insurance Acts than the country doctor. The country doctor is less well off—

partly because now he only gets the insurance capitation rate in respect of a number of people—indoor and outdoor servants of the squire, for instance—for whom before the Insurance Act he used to be paid at a pretty liberal rate. It is difficult to say how far that is due to the Act or how far the doctor is suffering from the impoverishment of the class that used to keep up big country places.

Also the country doctor is suffering from the increased mobility of the town doctor.

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

FURTHER SITTINGS.

(*Continued from p. 401.*)

THE Commission resumed its sittings on Monday, Feb. 9th, when Mr. Montgomery Parker continued his evidence, speaking on behalf of the National Society for Lunacy Reform. He said that when patients were too poor to pay for the services of medical men from outside, the Society considered that financial assistance should be granted, perhaps annually. As to the discharge of lunatics, it was thought by his Society that the petitioner's arbitrary power to either discharge or not led to frequent abuse; sometimes members of the family shrank from the trouble attendant on the return of the patient, and occasionally there was a fear of legal action being taken. Additional power of discharge, he insisted, should be vested in a judicial authority, without the right of veto now enjoyed by individual authorities; for licensed houses and hospitals the judicial authority should have the right of discharge. Licensed houses, Mr. Parker thought, should not be conducted with the object of making profit; some of them made larger profits than the public had any knowledge of. Their number should not be increased, and in that he was opposed to the British Medical Association. There might be a financial motive for detaining patients in these institutions. He also objected to what he termed the autocratic powers of medical superintendents of mental hospitals; he stated that long periods sometimes intervened without a patient seeing the medical superintendent at all. He agreed with the suggestion contained in a question by Lord Russell, that the appointment of a medical superintendent should not be permanent until he had occupied the post three years.

Allegations of Physical Violence.

Mr. Parker said numerous statements which his Society had received from patients did not allow of any doubt that on occasions physical violence was practised on patients. It was, he said, a feature of the age to substitute chemical violence for physical, and that was more difficult of detection. Some explanation of the use in these institutions of hyoscine was, he submitted, called for; also croton oil, the most painful and powerful purgative known. The Commission should inform itself of the purchases of croton oil over a definite period at all mental institutions. The Board of Control could demand this.

Mr. Parker was again in the witness-chair on Tuesday, when he continued his statements concerning the use of drugs in asylums, his main contention being that the disciplinary measures now usual were cruel. Environment, he said, had the greatest influence in the progress of a patient towards normal health, and so should receive close scrutiny. He alleged, in regard to treatment, that often the controlling factor was not the interest of the patient, but finance. It was a pity that the Board of Control had only recently pressed for a more extended use of open-air treatment; and there should be freer facilities for exercise. Private asylums should be required to render returns of recoveries to the Board of Control. It was not now necessary.

A further point which Mr. Parker made was that the medical staffs in these institutions must be considerably augmented. In some asylums there was practically no trained nursing staff. He pleaded also for more facilities for recreation and amusement, and the use of small libraries.

The meeting was adjourned to Feb. 24th.

NOTES FROM INDIA.

(BY AN OCCASIONAL CORRESPONDENT.)

Medical Relief in Rural Areas.

THE problem of bringing medical relief within easy reach of the rural population has been engaging the attention of the authorities for some time. The existing facilities in this respect are extremely inadequate. The great mass of the village populations have hitherto had no opportunity of coming into intimate daily touch with qualified doctors and have had to be content to a great extent with the services of unqualified men. Schemes for dealing with the difficult situation have been drafted by both the Bombay and Madras Governments. In the latter the only solution possible with the funds at present at the disposal of the Government seems to be on one of the three following alternative lines—namely, (1) the opening of a large number of Ayurvedic and Unani dispensaries, (2) the starting of a large number of itinerating or travelling dispensaries, and (3) the encouragement of

private medical practitioners (allopathic) to settle down in villages for practice by the grant of money subsidies and supply of medicines from public funds. The first alternative, though it is likely to find favour with the public, is impracticable and unrealisable at present on account of the lack of a sufficient number of duly qualified and accredited practitioners of the indigenous systems of medicine. As regards the second alternative, the starting of itinerating dispensaries has been tried on a small scale but the results have not been encouraging. The third alternative —namely, that of subsidising private practitioners who agree to settle down in villages—appears to be the cheapest and at the same time the best from many points of view. The idea is to divert to the villages the large number of unemployed medical men who now congregrate in the towns for private practice. This third scheme is put forward as a practical proposition by the Government, and its working is outlined in a recent order.[1] For the present, only registered medical practitioners will be admitted to the benefits of this scheme. The subsidy to be given will be low enough to compel the medical men to exert themselves and earn the confidence of their neighbours and high enough to serve as an attraction in the initial stage until they are able to build up a practice. The grant of the subsidy will be subject to the condition that the recipients agree to settle down in specified villages and treat the necessitous poor free. They will otherwise have complete liberty to accept such fees for medical attendance and treatment as they can get. The actual working out of the scheme will be entrusted to the respective local boards; the villages will be selected by them and the medical men by their presidents. The cost of the subsidies will be met entirely by the Government and will be paid as a contribution to the local boards concerned, and they will be disbursed monthly by the presidents concerned. The subsidy of medical men in order to induce them to settle in rural areas is a somewhat novel experiment and is one of the results of which will be watched with great interest by those who believe that the real people of India are the great masses of agriculturists who never leave their fields.

King Institute of Preventive Medicine, Madras.

The report of the King Institute for 1923–24 is a document full of interest to all medical men in the Presidency, and it contains material which should attract the attention of many who are working in the tropics. In spite of the cessation of routine vaccination for four months during the hot weather, the number of cases of vaccine lymph issued rose from 2,079,915 to 2,184,590, the largest issue on record since the Institute was founded. Concurrent with this increase in issue there was a decrease of 25 per cent. in the amount of lymph unaccounted for. The new arrangements made with the Public Health Department for the distribution of lymph to vaccinators have also ensured the use of fresh lymph and effected considerable saving in the cost of packing. In their review of this part of the report the Government emphasise that success in combating the factors which combine to keep the standard of successful vaccination on a low level will hereafter depend upon the vigilance of the district health staffs.

The field of scientific research has been widely explored by Colonel J. Cunningham and his staff during the year. Interesting and important results are reported to have been achieved by research into various aspects of relapsing fever. The scheme of travelling laboratories for examination of water-supplies at railway stations in the Presidency has been dropped for the present, but the appointment of a travelling inspectorate for examination of water-supplies in the Presidency is under the consideration of Government. The question of experiments on sewage disposal plant at the Engineering College, Guindy, depends on the budget proposals for 1925–26.

[1] Government of Madras Local Self-Government Department (Public Health), Order, No. 1522, P.H., Oct. 22nd, 1924.

The staff of the Institute took a very active part in public health propaganda by preparing the material issued by the Madras Health Council for the Health and Baby Week, and by preparing and delivering lectures. In notes such as these it is difficult to give any detailed description of a report so full of excellent material, and the Government rightly congratulate Colonel Cunningham and his staff on the excellent achievements of the year and on the high standard of efficiency maintained in the Institute.

The Services.

ROYAL ARMY MEDICAL CORPS.

Capts. to be Majs.: H. N. Sealy, A. Jackson (Prov.), E. C. Beddows, J. Rowe (Prov.), W. P. Croker (Prov.), A. B. H. Bridges, A. G. Brown, and R. Hemphill.

Capt. T. Parr and Lt. T. W. Davidson are secd. for duty with Sudan Defence Force.

Lt. (on prob.) M. A. Graham-Yooll resigns his commn.

TERRITORIAL ARMY.

Lt.-Col. D. J. Graham to be Bt. Col.

Maj. T. A. Hindmarsh to be Lt.-Col. and to command 50th (1st Northern) Casualty Clearing Station.

Lt. D. Ross to be Capt. ——

INDIAN MEDICAL SERVICE.

W. Aitchison and R. W. H. Miller to be Capts.

D. McD. Fraser to be Lt. ——

ROYAL AIR FORCE.

The undermentioned are granted short service commissions as Flying Officers for three years on the active list: C. G. J. Nicholls and B. Pollard.

DEATHS IN THE SERVICES.

Col. Robert Isaac Dalby Hackett, C.B.E., M.A., M.D. R.U.I., died on Feb. 15th at Cheltenham in his sixty-eighth year. He was a son of W. Thomas Hackett, J.P., of Castletown, King's County, Ireland, and a younger brother of the present Dean of Limerick, the Very Rev. T. Aylmer P. Hackett D.D. Born in 1857, he was educated at Chesterfield College and Queen's University of Ireland, where he graduated M.A. and M.D., with honours. He joined the R.A.M.C. in 1881, was promoted surgeon-major in 1893, lieutenant-colonel in 1901, and colonel in 1911, retiring at the end of 1912. In 1914 he rejoined the army for the period of the late war and served to its close. Early in his army career he served in Cyprus and Egypt, and took part in the Sudan Campaign of 1885, for which he received the medal and clasp and the Khedive's Star. The following year he was transferred to Nova Scotia, but went to South Africa in 1888 to serve in the Zululand operations against Dinizulu. He was again in South Africa for the war of 1899 to 1902 as principal medical officer of the General Hospital, and was with the expedition that relieved Ladysmith, subsequently serving in later operations in Natal and Cape Colony. For these services he had the Queen's medal and clasp, and the King's medal with two clasps. After the war was over he had further periods of service at the Cape, and during 1911-12 was in India as administrative officer of the Sialkote and Abbotabad Brigades. For his services in the late war he received the C.B.E. In 1895 he married Miss Evelyn Mary Wynne-Jones, by whom he had one son and one daughter.

JOHNS HOPKINS HOSPITAL, BALTIMORE: MEMORIAL TO THE LATE SIR WILLIAM OSLER.—A large memorial plaque showing the late Sir William Osler at work in his laboratory was recently unveiled and dedicated in the medical amphitheatre of Johns Hopkins Hospital. The plaque was modelled by Dr. R. Tait Mackenzie, of Philadelphia, and was presented on behalf of a group of former associates and friends of Dr. Osler by another Philadelphia physician, Dr. Thomas McCrae. The amphitheatre was crowded to overflowing when Mrs. McCrae, a niece of Dr. Osler, unveiled the tablet, Dr. William H. Welch gave his recollections of early association with Dr. Osler in the early days of the hospital. Other speakers were Dr. Rufus Cole, director of the hospital of the Rockefeller Institute of New York, who spoke of Sir William Osler as not merely a great teacher but also "learned historian, classicist, wise counsellor and able physician," and Dr. Henry M. Hurd, who was introduced as having known Sir William Osler probably before anyone else there present. A message was sent from the meeting to Lady Osler in Oxford informing her of the memorial.

Correspondence.

"Audi alteram partem."

REX v. BATEMAN.

To the Editor of THE LANCET.

SIR,—I can only say thank you deeply for the help, moral and material, which you extended to me during my terrible period of anxiety. If I wrote pages I could not say more.

I am, Sir, yours faithfully,

New Cross-road, S.E., Feb. 16th, 1925. P. BATEMAN.

THE DIAGNOSIS OF APPENDICITIS.

To the Editor of THE LANCET.

SIR,—Every abdominal surgeon, if not indeed the profession generally, cannot but be interested in the articles which you have published on appendicitis by Mr. Rendle Short. Whilst it appears to me that there are many points upon which even Mr. Short will hardly expect agreement, the most important of these is referred to in THE LANCET of Feb. 7th by Mr. Whitehouse Parkes. The main difficulty in a minority of cases lies in the question of diagnosis. With an early diagnosis the decision for operation follows naturally, and no question of its desirability can arise when the diagnosis of appendicitis is made within 48 hours of the onset of symptoms.

Mr. Parkes's letter refers to the case of his wife, in whom the early onset of pain was absent. Judging by the records this does occur in a very small proportion of cases. Your correspondent has thus raised a very interesting point, but he has stopped short of giving us any useful clue as to its explanation. Provided that his wife had no pain 36 hours before her vomiting, the case must be placed in the category of those in whom pain as an initial symptom is completely absent. If Mr. Parkes would let us know what the anatomical position of the appendix was at the time of operation he would be increasing our knowledge of the subject and conferring a benefit on operating surgeons.

In a case of mine in whom pain was present but tenderness absent until after the appendix had perforated, it was explained by the fact that until then no part of the diseased organ had come into contact with parietal peritoneum, and hence there was no irritation of somatic nerves until after perforation had taken place. This, I think, affords one explanation of the absence of tenderness in these cases. I have never come across a patient in whom pain as an initial symptom was completely absent. The ordinary explanation of some such cases arises from the fact of there having been an interval between the generalised colicky pain and the localised pain and tenderness, and of this interval having blotted out of the patient's recollection the generalised pain which is so characteristic as the initial symptom of the disease.

Might I ask Mr. Parkes to let us know the anatomical position of the appendix, and also its pathological condition at the time of operation?

I am, Sir, yours faithfully,

Belfast, Feb. 9th, 1925. S. T. IRWIN.

To the Editor of THE LANCET.

SIR,—In his clinical lecture on the subject in your issue of Jan. 31st, Mr. Rendle Short alludes to two well-known difficulties in the diagnosis of appendicitis—namely, abdominal tuberculous adenitis and lobar pneumonia. In both of these conditions histological examination of the blood is of considerable value.

As regards the former, for the last two years or thereabouts, Mr. H. H. Greenwood, my surgical colleague at the Great Western Railway clinic, Swindon, has sent me films from every case diagnosed as appendicitis that was not a surgical emergency. In about 20 the signs—i.e., leucopenia with relative lymphocytosis—pointed to tuberculous adenitis and operation was averted. As regards pneumonia, the degree of polynuclear leucocytosis is frequently about the same as that found in appendicitis, but in the latter condition eosinophilia is conspicuously absent, while in pneumonia it is almost always excessive.

In my view it is as essential to examine the blood in acute illness as it is to take the temperature, and it is difficult to understand why this procedure is so often omitted. No hæmatologist would claim that the blood picture should override a clinical diagnosis, but it is certainly a valuable aid in doubtful cases.

I am, Sir, yours faithfully,

A. KNYVETT GORDON, M.B.

Bedford-square, W.C., Feb. 5th, 1925.

REVACCINATION AND THE PRESENT SMALL-POX EPIDEMICS.

To the Editor of THE LANCET.

SIR,—Since last July we have had an epidemic in this institution which at first we labelled chicken-pox. Reading Dr. R. P. Garrod's lucid article in THE LANCET of Jan. 31st, entitled Para-smallpox, we found that he exactly described our cases and accordingly the Ministry of Health was communicated with. The diagnosis of small-pox was made.

While vaccinating all the resident population here we purposely included 24 cases who had suffered from the disease. Of this 24, eight reacted positively to vaccination. One of them was amongst the most severely affected and had his attack in October last. Of the remainder, three occurred in July, three in August, and one last December. All were exactly the same type of case as we have at present, and it is highly improbable that we have two different epidemics running concurrently.

It would be interesting to hear if others have had similar or diverse experiences and also to read the opinions of those qualified to give them as to the probable relation of our epidemic with small-pox proper, in view of the above facts. One of the mildest of our present cases is that of a female who has never been vaccinated in her life, and one of the worst has a vaccinia running concurrently.

I am, Sir, yours faithfully,

A. T. W. FORRESTER,
Medical Superintendent, Hatton Mental Hospital.

Feb. 14th, 1925.

THE ACIDIC VALUE OF THE URINE IN SKIN AND OTHER MANIFESTATIONS.

To the Editor of THE LANCET.

SIR,—Sabouraud, in his work on "Séborrhée, Acnés, Calvitie" (published in 1902), pointed out that the urine of seborrhœics was characterised almost constantly by *hyperacidity, hyperexcretion of chlorides*, and *hypoexcretion of phosphates*. He did not, however, grasp the importance of his observations; he did not apparently realise that the hyperacidity was not due to uric acid; and he was misled, like Dr. Whitfield, by the fact that on testing the urine of seborrhœics it may sometimes be found even hypoacid. And yet Sabouraud's observations might have given him the clue to the proper understanding of seborrhœa and the seborrhœic eruptions, to which he has devoted so much patient and invaluable study. I was, I believe, the first to coin the term "seborrhœic state," and, in conjunction with Dr. Semon, to insist on the value of alkalis in the treatment of seborrhœic manifestations. I hope shortly to publish fully the results of my observations since the war, but the subject is one of such great importance, not only to the dermatologist, but also to the general

physician, that, in view of Dr. Whitfield's letter, I should be obliged if you would allow me space to set forth a résumé of my conclusions.

Shortly after the war, in conversation with Dr. Whitfield, I learned that he was unable to confirm my findings, and, having a very high regard for his opinion and critical faculties, I set myself to investigate my civilian patients, with the aid of some of my colleagues. Apart from certain biochemical investigations carried out for me by Dr. Ryffel and others at Guy's, and by Dr. Broughton Alcock, I, like Dr. Whitfield, have relied chiefly on litmus paper in testing urinary acidity, and I still insist that the *alkaline tolerance* of seborrhœic patients is high, sometimes to an astounding degree. Very early in my post-war investigations I recognised the fact that when the urine of a person, even with severe seborrhœic manifestations, is first examined it may be only faintly acid, neutral, or very occasionally even alkaline, but I have found—and have verified the fact in many such cases—that when alkali is administered the urine for a time becomes progressively more acid. This apparently contradictory observation is explicable if my view of the ætiology of the seborrhœic state be accepted. To cite but one recent case—a severe acne: The patient was the son of a doctor, extremely self-conscious, and most conscientious in carrying out the treatment advised. His urine at the first examination was acid but not intensely so. He took for a fortnight never less than three doses per diem of 1 drachm of sodium bicarbonate and 30 gr. of potassium citrate, yet his urine was still strongly acid to litmus on the fifteenth day. I have had other cases in hospital, where the administration of alkali could be controlled and the urine tested daily, in which larger doses of alkali were taken over a long period without producing an alkaline urine.

Apart from the urine, I have tested the saliva (being careful to avoid the fallacy of possible acid-production from food-fermentation in the mouth) and the sweat of the palms, where, of course, there are no sebaceous glands. Having believed, since my physiological days, that the saliva was alkaline and that ptyalin was inactive in an acid medium, I was surprised to find how many people have definitely acid saliva; for the past few months I have tested this point on nearly all my private patients, and I have found that, in seborrhœic persons, the saliva usually gives an acid reaction to litmus, the acidity being sometimes as marked as that of a fairly acid urine. Some degree of the seborrhœic state is so common that many of its slighter manifestations are not considered, even by dermatologists, as abnormal, but one does meet with absolutely normal people, and it is interesting that, just as there exist seborrhœic families, so the normal non-seborrhœic state tends to have a familial incidence. My own family is a case in point. I am the youngest of six, and not one of us has ever had any seborrhœic disorders, except that I became for a while slightly seborrhœic in Mesopotamia. I have used myself and others, with no trace of seborrhœa, as controls; our saliva is always alkaline and our alkaline tolerance is low.

It was soon established by my colleagues at Guy's that the blood in seborrhœic cases showed no evidence of acidosis, but Dr. Ryffel, who has investigated a number of my patients, found that in several, usually inveterate seborrhœics the ammonia-ratio was high, sometimes strikingly so, and also the acid ratio. He also confirmed the high alkaline tolerance of some of my cases. Prof. Haldane has suggested to me that the explanation of the high alkaline tolerance, with no evidence of acidosis in the blood, might be that these persons produce a relatively insoluble acid or acids, which are with difficulty excreted by the kidney, unless the requisite quantity of alkaline bases are available, but more easily by the sebaceous and sweat glands. He advised me to try the effect of sodium phosphate, since acids are normally excreted in the urine as acid sodium phosphate. This I did, but was not convinced that better results were obtained than with my original combination of sodium bicarbonate and potassium citrate. Recently I have prescribed a mixture of magnesium and calcium phosphate in combination with bicarbonates, but have not yet had time to draw any conclusions.

The excessive excretion of sebum (seborrhœa) and of sweat (hyperidrosis oleosa) that obtains in seborrhœic persons I believe to be due to the excretion via the sebaceous and sweat glands of acid by-products of metabolism (*not* uric acid, but probably, as some observations of Dr. Broughton Alcock would suggest, volatile fatty acids), an insufficient quantity of alkaline bases being available for their excretion via the kidneys. It is also likely that, apart from the sebaceous and sweat glands, the whole epidermis takes part in this vicarious acid excretion, and this accounts for the slight epidermal thickening, and the hypertrophy of the horny layer, with the modification of its fat-content, noted by Darier. The mucous membranes and salivary glands appear also to share in this process. It is the excretion of these acids via the skin and mucous membranes that would seem to favour the growth in them of the micro-organisms on which the complications of the seborrhœic state depend—namely, in the skin, the so-called "bottle-bacillus" (probably a yeast), the micro-bacillus of acne, which swarms in the sebaceous follicles of the seborrhœic, and various strains of staphylococci, and in the mouth and nasopharynx, streptococci and other organisms. The chronic seborrhœic is not only liable to pityriasis, seborrhœic dermatitis, acne, sycosis, boils, carbuncles, chronic blepharitis with styes, rosacea, infectious eczematoid dermatitis, miliaria rubra, and hydrosadenitis, but also to chronic nasopharyngeal catarrh, conjunctivitis, gingivitis, pyorrhœa, and balanitis.

There also may occur in the seborrhœic state a true eczema, distinct from seborrhœic dermatitis in that the inflammatory changes are not primarily due to bacterial infection, but in all probability to the actual excretion of acid by the sweat and sebaceous glands. When occurring on the palms and soles this constitutes one form of cheiropompholyx or dysidrosis. Hyperidrosis of highly acid sweat is a notable symptom. In this condition the administration of alkali in sufficient quantity is absolutely specific, and will cut short an attack without any local treatment. I do not, however, agree with Dr. Doble that all cases of cheiropompholyx (eczematoid ringworm is, of course, excluded) are of this nature. When once an infection with micro-organisms has become established, the factors of sensitisation and specific lowered resistance to definite strains of bacteria come into play, and the administration of alkalies alone is not sufficient to cure; it is, however, a very valuable aid.

In the ætiology of the seborrhœic state, which is appallingly common, I believe the following are the chief factors responsible:—

(*a*) *Heredity.*—Darier, in his description of "la kérose," which corresponds clinically to my "seborrhœic state," stresses the influence of heredity. In this he is right, as it is undoubtedly a predisposing factor of importance (cp. hereditary diabetes), but, given the necessary abnormal conditions of life, the seborrhœic state may supervene even in the healthiest person. Hereditary cases, however, are much more susceptible to the influence of an unsuitable diet and a sedentary life than normal persons.

(*b*) *Diet and Exercise.*—The abnormal acid production that characterises the seborrhœic state is obviously an indication of deficient metabolism with the accumulation of incompletely oxidised acid by-products. A disproportion between the amount and quality of food taken and the physical energy expended is clearly, therefore, one important factor. One frequently sees the seborrhœic state develop *de novo* in trained athletes, when they abandon their games and adopt a sedentary life, without at the

same time restricting their diet. Conversely, the most confirmed seborrhœic will become normal if he diets wisely and adopts a vigorous out-of-door life; the greasy skin becomes dry and clear, and the secondary infections disappear. The most important factors, then, predisposing to the development of the seborrhœic state are an excessive dietary, particularly of soft starchy and concentrated sweet foods, an insufficient intake of alkaline salts and water, a sedentary life in over-heated, badly-aired surroundings, and lack of exercise.

(*c*) *Overclothing.*—The influence of overclothing is so obvious that it need not be considered. The extraordinary effect on the seborrhœic skin of exposure of the whole body to sunlight and air can be seen by anyone who cares to visit Dr. Rollier's clinic at Leysin.

(*d*) *Constipation*, and dyspepsia of the fermentative type. It is useless to attempt to cure the various seborrhœic manifestations by local treatment alone; they invariably relapse or new ones develop. The secret of success lies in the initial administration of alkalies, a physiological dietary, regular physical exercise, correction of constipation and other sources of toxæmia, and, when chronic secondary infection is present, the raising of the patient's resistance by every available means. As to the value of alkalies, which Dr. Whitfield and others deny, there is not the slightest doubt. I have kept in touch with a large number of patients, some of them medical men and students, and they find that as long as they take a sufficient quantity of alkali they keep free from active seborrhœic manifestations. That some of them were very sceptical at the outset is sufficient to exclude an element of suggestion.

I am, Sir, yours faithfully,

H. W. BARBER.

Devonshire-place, W., Feb. 16th, 1925.

POST-OPERATIVE PULMONARY AFFECTIONS.

To the Editor of THE LANCET.

SIR,—In your report (Feb. 14th) of the discussion on the prevention and treatment of post-operative pulmonary affections, a full abstract is given of my remarks upon bronchitis, but no reference is made—probably from want of space—to the explanation which I offered of the causation of the more important complication (from the anæsthetist's point of view)—viz., pneumonia. May I be allowed to add to your report?

After stating my belief that bronchitis following abdominal operation under ether anæsthesia is chiefly due to the irritating effect of high concentrations of ether vapour, particularly in certain subjects, I proceeded to argue that there are two factors at work in the causation of surgical pneumonia—one being bronchitis, whether pre-operative or anæsthetic, or possibly due to prolonged exposure during nerve-blocking; the other being collapse, usually partial, of the lung, which as the result of this bronchitis becomes inflamed. Collapse of the lung is probably of nervous origin. That the site of operation has especial influence is proved, I held, by the very slight liability to pneumonia after non-abdominal operation, even though ether be given and the patient be bronchitic; and the fairly frequent occurrence of pneumonia after abdominal operation under a local and, occasionally, after a spinal anæsthetic—I took the view, therefore, that the selection of the anæsthetic was still an important part of the duties of the anæsthetist and that everything possible should be done to prevent the onset of bronchitis and to counteract the tendency to pulmonary stasis.

I am, Sir, yours faithfully,

FRANCIS E. SHIPWAY.

York-terrace, N.W., Feb. 14th, 1925.

TINCTURE OF IODINE (PH. FR.).

To the Editor of THE LANCET.

SIR,—In recent years many physicians in this country have been in the habit of prescribing for internal administration tincture of iodine, French Codex; from my own observations I have formed the opinion that during the last two or three years the frequency of prescribing this product is increasing. I also have a very firm conviction that when tincture of iodine, French Codex, is prescribed, the physician has in mind the tincture of iodine of the Codex 1908, which does not contain any potassium iodide, but is prepared by dissolving 10 g. of iodine in 90 g. of alcohol 95 per cent.

A preparation introduced in the first supplement of the Codex (1920) as "teinture d'iode iodurée" contains 4 g. potassium iodide in addition to 10 g. of iodine in 136 g. of alcohol 90 per cent., and in the second supplement to the French Codex (1922) the tincture of iodine of the Codex 1908 was suppressed, and the title "official tincture of iodine" now applies to the "teinture d'iode iodurée" of the 1920 supplement.

From these facts you will realise that when now physicians prescribe tincture of iodine, French Codex, they will not get (what I think they really intend) the tincture of the 1908 Codex, containing no potassium iodide, but the preparation containing potassium iodide which is now official. No indication of the changes appears to have been published in medical literature as far as I know.

I am, Sir, yours faithfully,

P. C. BRETT, M.B., B.S. Lond.

Quex-road, West Hampstead, Feb. 9th, 1925.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—In view of the recent articles that have been appearing about 86, Brook-street in the *Daily News*, I feel compelled to ask you to be good enough to publish this brief note, in which I would desire to emphatically dissociate either myself or any of my colleagues with the ætiology of those articles.

I may just add that our united disapproval has found expression not only in an attempt on my part to suppress the publication of the last two articles, but also in a letter repudiating all knowledge and responsibility of them, written to the General Medical Council.—I am, Sir, yours faithfully,

DRURY PENNINGTON,
Medical Director.

86, Brook-street, W., Feb. 16th, 1925.

*** The abuses that may arise from articles signed by medical men and appearing in the lay press are obvious, and so is the good that may be done by wise and authoritative pronouncements through the same medium. Of what may lie beneath unsigned contributions there can be no definite opinion in the absence of any clue to personal bias. We publish Dr. Pennington's disclaimer with pleasure, and take the opportunity of adding that a complimentary reference to THE LANCET in a Sunday newspaper last week, crediting us with views that are only half correct, was not inspired by any member of our staff.—ED. L.

METROPOLITAN (QUEEN'S) NURSING ASSOCIATION JUBILEE.—This association, which has its headquarters at 23, Bloomsbury-square, London, W.C., will celebrate the 50 years of work it has done among the poor of central London by a service of thanksgiving to be held at the Church of St. Martin-in-the-Fields on Wednesday, March 18th, at 2.15 P.M. The association provides trained district nurses for treating the poor in their own homes, and was founded by Florence Nightingale in 1875. The association was the forerunner of Queen Victoria's Jubilee Institute to which it is now affiliated.

Public Health Services.

HOSPITAL NOTES.

THE SCOTTISH HOSPITAL INQUIRY.

THE Hospital Services Committee, appointed by the late Government to inquire into the adequacy or otherwise of the existing hospital facilities in Scotland, has now, so far at all events as at present arranged, concluded its public sittings for the taking of evidence. The Committee has held 15 sessions extending over five weeks, and has examined about 50 witnesses.

Dr. William Robertson, M.O.H. for Edinburgh, said that the general provision of hospitals for the isolation of infectious diseases was ample. As preventive medicine progressed and housing improved the demands upon isolation hospitals would probably be reduced. If real and lasting benefit was to be secured, children convalescing from measles and whooping-cough ought to be removed from the acute wards to others, where fresh-air treatment could be provided, but during acute epidemics of these infections the scarcity of beds made this impossible, and patients had to be discharged just after they had recovered from the acute stage. He held, speaking of Scotland as a whole, that the provision of institutions for the treatment of tuberculosis is unequal and that accommodation for the advanced type is insufficient. There are long waiting lists which compel premature discharge from sanatoriums. Nor is there enough hospital accommodation for the treatment of venereal diseases, more especially of the congenital form. There were no insuperable difficulties in the way of coöperation between the Voluntary, the Public Health, and the Poor-law hospitals.

Dr. G. H. Stevenson, of Glasgow, a member of the Massage Board of Scotland, claimed that by adequate organisation of massage work it might be possible to save beds in general hospitals, shorten the period of incapacity, prevent many cases of chronic invalidism and crippling, and help those already crippled. There is only one training school in Scotland, that at the Western Infirmary in Glasgow. The trained workers in other hospitals are numerically hopelessly inadequate. Nor are there any special orthopædic hospitals on a large scale in Scotland, or comprehensive schemes for the treatment of disablements after discharge from hospitals, with the result that patients usually went back, he said, to their state on admission. A district masseuse service on the lines of the district nurse would liberate many beds and would be of more value than short periods of hospital treatment.

Dr. Alexander Shearer, a medical officer of the Scottish Board of Health, gave evidence regarding hospital and ancillary services in the Highlands and Islands, with particular reference to the application of the Highlands and Islands Medical Service Fund, which amounts to £42,000 a year. The need for specialist assistance in surgery in Highland hospitals was more urgent than the need for medical consultants, and would be even more heartily welcomed by hospital superintendents and medical practitioners generally. There was need for having at Inverness a thoroughly up-to-date hospital equipped and staffed so as to be able to provide services far beyond the boundaries of Inverness burgh. The Board had already, as an experiment, assisted in the establishment of surgeons at Lerwick, Stornoway, and Lewis. The experiment promised excellently, and it was worth considering whether it should not be extended to other areas in the Highlands, where the problem was severe. If a multiplicity of organisations were to come into being, each with its separate appeal for hospitals, ambulances, specialists, and so forth, there would be an unseemly competition for financial and other assistance, with much waste of effort and damage to essential services. If a unifying organisation on a voluntary basis was not adopted, the inevitable alternative was the organisation of the services under a local authority as general supervisors. The general hospital accommodation in the Highlands and Islands was reasonably adequate, and in medical cases the work done was highly satisfactory; the nursing services were also adequate at present. Dentistry was one of the services which did not operate at all in the Highlands.

Mr. James Hay, Director of Aberdeen Royal Infirmary, said the voluntary system had risen to the occasion in the North of Scotland in a wonderful way. At Aberdeen Infirmary, with 320 beds, the normal waiting list was about 300; 400 beds would meet its needs. If the Health Insurance Societies were to pay even one-half of the out-of-pocket expenses the infirmary incurred on behalf of their members, £6000 would be realised. The contribution from workmen amounted last year to £3842.

THE METROPOLITAN HOSPITALS.—The deficiency in the accounts of King's College Hospital, which a year ago was £67,000, has been reduced by one-half. The King's Fund contributed £16,000 and Lord Hambleden cancelled a loan of £20,000.—Mr. A. J. H. Carlil has offered to contribute £20,000 towards the cost of establishing a Unit of Pathology at Westminster Hospital.—Princess Mary has opened extensions to the West London Hospital, which brings the number of beds up to 220, and include a badly-needed accident ward. Hitherto accident cases have had to be placed on couches. A paying wing containing 22 private rooms is among the additions.—It is hoped to enlarge the Elizabeth Garrett Anderson Hospital for Women by building a children's ward and a new maternity ward, and extending the out-patients' department at a total cost of £75,000. It is suggested that the money should be raised, in the main, by 10,000 tea-parties given by women of all classes and occupations, each guest being asked to give a donation. Such a tea-party, given by the women of the Central Telegraph Office, produced £236.—The average cost of maintaining a patient in the London Fever Hospital has fallen during the past year from £34 4*s.* 9*d.* to £24 8*s.* 7*d.*—St. Mark's Hospital is to be extended to provide better accommodation for out-patients and a larger laboratory for cancer research.

GLASGOW ROYAL INFIRMARY.—The annual report of this great hospital shows that it is suffering seriously from the increasing demands upon its resources. Nearly 14,000 in-patients and nearly 52,000 out-patients were treated during the year, the first figure being an increase of just over 1200 and the second of 3261. The receipts in 1924 reached the "record" total of £243,000. The infirmary normally accommodates 664 patients daily, but the beds occupied numbered 727. A new biochemical department is proposed. At the annual meeting Dr. James Macfarlane, chairman of the board of management, suggested, as means of relieving the pressure, the erection of an auxiliary or convalescent hospital to which many cases could be removed after short treatment in the infirmary, and the establishment of a fully-equipped nursing home or hospital for paying patients. When the new nurses' home is ready for occupation in June or July the erection of additional accommodation for out-patients will be begun. The infirmary was entirely reconstructed and the accommodation increased by 50 per cent. as recently as 1914.

QUEEN'S HOSPITAL, BIRMINGHAM.—For many years past the work of this hospital has been carried on with increasing difficulty owing to the inadequacy of the accommodation—the surgical work, for instance, is done in the same building as when the hospital was established 85 years ago. The Birmingham

Hospital Council has now approved a comprehensive scheme of enlargement, to cost £120,000. A new block behind the existing buildings will contain six new surgical wards of 20 beds each; there will be three large operating theatres with their accessories, and a large X ray department. When the surgical block has been completed a new nursing home will be provided, and other enlargements will include departments for the diseases of women, and of the ear, nose, and throat. The out-patients' and pathological departments will be entirely remodelled, and there will be a new electrical and mechanical therapeutics department. The scarcity of beds in the Birmingham hospitals is so acute that the city is said to be worse off than any other large town in the country.

ANNUAL SUBSCRIPTIONS AT LEEDS.—The effort begun last year to extend the system of annual subscriptions towards the maintenance of the four principal hospitals of Leeds is making good progress. Upon the basis of a contribution of 2s. per employee per annum 700 subscribers are giving £7000 a year. In addition, the Workpeople's Hospital Committee is collecting over £30,000 a year. To organise the extension of the system of annual subscriptions the city has been divided into 20 blocks, each with its own subcommittee which, in friendly consultation, assesses every firm separately. The waiting-list for the Leeds Hospitals is said to number 1900.

HOSPITALS IN SOMERSET.—The Somerset Voluntary Hospitals Committee has come to the conclusion, after three years' careful study of the position, that the voluntary system as hitherto worked is "not giving to the nation that full, complete, satisfactory and universal service which it needs," and that some form of coördinate national service is required which would preserve the valuable elements of the system. With the exception of Bath, all the hospitals are paying their way, but "the county is well able to maintain all its voluntary hospitals, provided that there be some equitable method of distributing the burden."—In addition to building the Bristol Homœopathic Hospital and providing the site at a cost exceeding £100,000, Mr. and Mrs. Melville Wills have now given £15,000 for equipment.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 7TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely—small-pox, 138; scarlet fever, 1747; diphtheria, 1096; enteric fever, 25; pneumonia, 1778; puerperal fever, 51; cerebro-spinal fever, 12; acute poliomyelitis, 5; acute polio-encephalitis, 1; encephalitis lethargica, 61; dysentery, 4; ophthalmia neonatorum, 127. There were no cases of cholera, plague or typhus fever notified during the week. The number of small-pox cases showed a decrease of 18 from the number for the preceding week. Ten cases were notified from Derbyshire, 15 from Northumberland, 29 from Notts, and 71 from Yorks, North Riding (Middlesbrough C.B.).

Deaths.—In the aggregate of great towns, including London, there were 4 deaths from enteric fever, none from small-pox, 73 from measles, 17 from scarlet fever, 50 from diphtheria, 133 from whooping-cough, and 291 from influenza, as compared with 202, 195, 142, and 124 in the four preceding weeks.

In London itself the deaths from diphtheria numbered 18 and from whooping-cough 55.

OPHTHALMOLOGICAL RESEARCH IN THE U.S.A.—It is announced that a fund of $3,000,000 (£600,000) has been raised for the establishment at Johns Hopkins University, Baltimore, of a centre for ophthalmological research. The new centre will be called the Wilmer Institute, in honour of Dr. William Holland Wilmer, of Washington, whose friends and patients subscribed half the total of the fund. The remainder was given by the General Education Board of the United States. Dr. Wilmer will assume direction of the institute. Lord Grey of Falloden, a former patient of Dr. Wilmer, is one of the contributors. In addition to laboratories, the Wilmer Institute will comprise a hospital with 60 beds, of which 40 will be for non-paying patients. It is expected that the institute will be completed by September of this year.

Obituary.

EDWARD EMANUEL KLEIN, M.D., F.R.S.

WE regret to announce the death of Dr. Klein, the famous pioneer in histological and bacteriological research, which occurred at his residence in Hove Sussex, on Feb. 9th, in his eighty-first year.

Born in 1844 at Ersec, he was educated in Vienna, and from an early age showed a marked leaning towards minute anatomy at a time when histology as a branch of science was in its infancy. At the age of 24 he reached the position of professor in the University, by which time he had published an important monograph on the arrangement of the muscles of the œsophagus, and in other ways had shown his mastery of microscopical technique. In 1871, on the invitation of Sir John Simon, then principal medical officer to the Local Government Board, he came to London to carry on some bacteriological investigations for the Board and thus gained an introduction to scientific circles in this country. During the long period in which he was associated with the Local Government Board he published in the reports of the Medical Department a series of valuable observations on numerous pathological and bacteriological subjects. At different times most of the great infective processes came under his investigation, and our knowledge of typhoid fever, epidemic diarrhœa, small-pox, and cholera have all been enlarged by his untiring researches. He reported in this way on the concurrent inoculations of different infections, on the antagonisms of microbes, on the life of pathogenic microbes in water, on protective inoculations generally and the prophylaxis of diphtheria, on oyster culture in relation to disease, on the possible association of microbes with various fevers, on the differentiation of anaerobic microbes present in the human intestine—to mention some of the general researches; while in association with Houston he reported inter alia on the bacteriological evidence of the sewage polution of water, and on the behaviour of specific microbes in relation to cereal products. The mass of work executed for the Local Government Board during some 15 years was, it will be seen, very large, for only that with a wide range has been mentioned here, and in all of the reports his technical skill was displayed.

Shortly after joining the Local Government Board he was invited to join the staff of St. Bartholomew's Hospital Medical School, where he was first assistant lecturer on anatomy and physiology, and later director of the bacteriological department. At St. Bartholomew's Hospital he made a great reputation as a teacher, and some of our leading physicians and pathologists to-day would admit their profound debt to his instruction and personal help. He became associate editor of the *Quarterly Journal of Microscopical Science* at its outset, and in 1873 an important monograph on the anatomy of the lymphatic system appeared in that paper, which received warm notice in our columns, and sufficiently accounted to those who were unfamiliar with his work for his early election to the Royal Society. Two years later appeared his work on the lymphatic system of the lungs, in which attention was drawn to the manner in which tubercle might spread through the tissues, and about the same time he published a handbook for the physiological laboratory, in which he collaborated with Sir Lauder Brunton.

In 1879 he brought out an "Atlas of Histology" which purported to give a pictorial and literal representation of tissues of the vertebrates, and was a practical compendium of the histology of the day. The book was furnished, from preparations and specimens made by the author, with illustrations drawn and executed by the late Noble Smith, a well-known orthopædist who was also a remarkable draughtsman. In this book Klein incorporated his previous work on the anatomy of the lymphatic system. The work was published in 13 parts, which appeared at brief intervals

and few text-books can ever have more exactly met the immediate needs of medicine than this vast Atlas. The greater portion of the illustrations and nearly the whole of the text were original, and of the latter it may be said that the form was remarkable in that the author's meaning was always perfectly clear, although his English was a comparatively recent acquisition. Five years later came the work which brought together his researches into normal histology with those into bacteriology, and his "Introduction to the Study of Specific Micro-organisms" remained for many years the classical authority on its subject. The text-book entitled "Elements of Histology" which he wrote in collaboration with Dr. J. S. Edkins also earned justly a large circulation. It went through more than one edition and was steadily revised and rewritten where necessary. The introduction given by this text-book to an understanding of the architecture and life of the individual cell, especially as regards the minute structure of the nervous system, were of the greatest educational value, especially as the text contained illustrations of the latest staining processes; in the last edition photography was introduced, when the results, if less distinct than the older semi-diagrammatic drawings, corresponded more closely with the preparations which the student had to examine for himself.

Klein's later work, such as his researches into plague and cholera, comes more readily to the mind than does his consistent labour in welding normal histology with bacteriological research. For example, he made, some 20 years ago, for the Local Government Board an elaborate study of the different methods by which rats may become infected by plague. As a result of experimental work undertaken by himself and others he was led to attribute to infected food a greater measure than had formerly been regarded as likely. He found that although fresh cultures of plague bacillus failed to induce plague when ingested by the rat, cultures which had undergone a certain amount of drying, and around which there had been formed, as it were, a protective envelope capable of resisting influences of the gastric juices, led to plague in the rodent, when after death Peyer's patches in the lower ileum were found swollen, necrosed, and packed with plague bacilli. Much of such work has remained only suggestive, and in the history of science Klein will mainly be remembered as a great cytologist.

Klein saw during his 80 years of life the rise and development of bacteriology and all which that science means to practical medicine and surgery. At the time of his birth bacteria could be described as microscopical curiosities interesting only to a few experts, while the investigation of vital phenomena under the heading of physiology was also in its early stages as far as the knowledge of to-day is concerned. Our familiarity with the structure of organisms has become infinitely larger in scope and more precise in details since his time, but it will not be forgotten that Klein was one of the first men of science to insist on the importance of studying the relation between normal cytology and bacteriology.

Dr. Klein married in 1877 Mrs. S. A. Mawley, who predeceased him, and leaves a son, Dr. Bernard Klein.

CECIL CLARKE, M.D. LOND.

BY the death at Montana of Cecil Clarke, assistant physician at the Bristol General Hospital, an enthusiastic worker has been lost to the medical profession, and a man whose courage in the face of persistent ill-health was of a high order.

Clarke was born in Bristol in 1885 and was educated at Westminster and the Bristol Medical School. His clinical appointments were held at the General Hospital. While there he gained the Henry Marshall Prize, the Clarke Surgical Scholarship, and the Martyn Memorial Scholarship in 1908, and the Sanders Scholarship in 1909. He qualified M.B., B.S. Lond. in 1908, having previously obtained the Diploma of the Conjoint Board, and having held the appointments at the institution undertook a voyage to the Far East. Later he held the appointments of resident medical officer and assistant in the pathological department at Brompton Hospital, where he had a bad attack of pleurisy, which was his first experience of the broken health which troubled him during the remainder of his life. After recovering from this illness he took up post-graduate work at University College Hospital and the London Hospital and on the outbreak of the second Balkan war joined the British Red Cross Unit which served with the Balkan army. He distinguished himself in this campaign and gained several British and Bulgarian decorations. In 1913 he took his M.R.C.P. Lond. and proceeded to Germany for further post-graduate studies. In Dresden he spent a long time in the pathological department under Prof. Schmorl; then he went to Vienna and was there when the war broke out. He hurried back to Dresden, and being unable to obtain his release he escaped through Holland, relying upon his great familiarity with the language. On his arrival in London he took a commission in the R.A.M.C. He was sent out to France to work as bacteriologist at a large military hospital dealing with civilian cases of typhoid fever. At this time there was an extensive outbreak of typhoid fever among the civil population and the refugees concentrated in the Ypres neighbourhood. Later he was transferred to Salonica, where he worked with Prof. L. S. Dudgeon and carried out some valuable researches into the morbid histology of malaria. While with the field laboratory in Macedonia he became infected with bacillary dysentery. However, he remained at his post until 1917, when he was invalided home. He then went to France again, and in spite of his ill-health insisted on taking service with a battalion. He was posted to the Sherwood Foresters and served with them through much strenuous fighting in Flanders.

In 1919 he returned to Bristol to take up the medical registrarship at the General Hospital, and a little later he was appointed assistant physician to the hospital and physician to the Queen Victoria Jubilee Convalescent Home. In 1922 his health broke down again, and lung trouble became seriously active. Throughout his long illness he adopted an entirely philosophical and professional attitude to his symptoms. His mind remained active and he wrote and read a great deal. Although he had spent such a long apprenticeship at pathological and bacteriological work he regarded this all as a preparation for clinical medicine, and it was to clinical medicine that he hoped to devote his life. His published medical papers include: a Report on a Series of Relapses in an Epidemic of Enteric Fever (*Jl. R.A.M.C.*, 1915); Search for Typhoid Carriers among 800 Convalescents (jointly), THE LANCET, 1916, i., 566; Cultivation of the Malarial Parasite (jointly), ibid., 1917, i., 530; Investigations on Fatal Cases of Pernicious Malaria Caused by *Plasmodium falciparum* in Macedonia (jointly) (*Quar. Jl. Med.*, 1919); Congenital Disease of Pancreas with Infantilism (jointly), (ibid., 1924); Renal Efficiency (*Bristol Med. Chir. Jl.*, 1922). All of these communications were stamped by the care and accuracy which were so prominent a feature of his work and character.

A friend writes of him as follows:—"To him pathology was always the foundation of medicine; medicine without pathology was unsound, and pathology without medicine, fruitless. . . . He was never known to complain about his lot, and although with his knowledge of medicine and pathology he must have been fully aware of his poor outlook, he always spoke hopefully and seemed to believe that he would become strong enough to return to some kind of medical employment."

Another writes: "Cecil Clarke was a good friend, a wise physician, a helpful colleague, and an able critic. To those who were fortunate enough to know him intimately, his friendship will always remain a treasured memory."

Dr. Clarke is survived by his widow.

J. H. MONTGOMERIE BELL, M.D., F.R.C.S. EDIN.

John Henry Montgomerie Bell, of Lowestoft, died recently at Harrogate in his forty-eighth year, after a long and painful illness patiently endured. He graduated M.B., Ch.B., at Edinburgh University in 1901, and gained the M.D. in 1907. In the same year he was admitted a Fellow of the Royal College of Surgeons of Edinburgh. He held successively the appointments of house surgeon to the Deaconess Hospital, Edinburgh, of house surgeon to the Ophthalmic Department, Edinburgh Royal Infirmary, and senior house surgeon to Rotherham Hospital. Dr. Bell was practising in Canada when war was declared, and he immediately joined the Canadian Army Medical Corps, where he gained the rank of Major. He served throughout the war, and there is little doubt that the hardships he endured when on active service had much to do with his fatal illness. Dr. Bell was an accomplished linguist and scholar.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The following lectures will be delivered at the College, Pall Mall East, London, on the following Tuesdays and Thursdays, at 5 o'clock. Milroy lectures: Dr. Salusbury MacNalty on Epidemic Diseases of the Central Nervous System, March 5th, 10th, 12th. Goulstonian lectures: Dr. John Alfred Ryle on the Study of Gastric Function in Health and Disease, March 17th, 19th, 24th. Lumleian lectures: Dr. Hector Cameron on Some Forms of Vomiting in Infancy, March 26th, 31st, April 2nd. Oliver-Sharpey lectures: Dr. E. D. Adrian on the Interpretation of the Electromyogram, May 5th, 7th. Croonian lectures: Dr. S. A. K. Wilson on Disorders of Motility and of Muscle Tone, with special reference to the Corpus Striatum, June 9th, 11th, 16th, 18th. Any member of the medical profession is admitted to any of the lectures on presentation of card.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Final Examination of the Conjoint Board, held from Jan. 13th to Feb. 3rd, the following candidates were approved in the subjects indicated, but are not eligible for diplomas:—

Medicine.—G. N. M. Aitkens, Charing Cross; R. G. Anderson, St. Bart.'s; R. Armsden, Univ. Coll.; H. I. C. Balfour, St. Bart.'s; C. W. Bamford and R. M. Bates, London; J. R. Beagley, St. Bart.'s; P. R. T. Becker, Guy's; Kathleen Blake, King's Coll.; W. R. Bonner-Morgan, St. Bart.'s; Margaret Bowstead, Royal Free; Elsie Boyton and J. L. Brown, King's Coll.; Eleanor G. Burdett, St. Mary's; M. F. Butler, Guy's; Mary E. Campbell, Charing Cross; A. G. Chamberlain, St. Bart.'s; R. J. K. Chattey, Middlesex; L. M. Clark, King's Coll.; D. R. T. Clendon, Univ. Coll.; Ella J. Cockram, King's Coll.; Hilda A. Cohen, Cardiff; P. V. Crameri and B. R. Crossley, Univ. Coll.; R. N. Curnow, St. Bart.'s; Evelyn J. Curtis, King's Coll.; H. E. Daniel, St. Bart.'s; A. E. de Fonseca, King's Coll.; J. V. Dockray, Middlesex; J. Ewing, Leeds; Christabel S. Eyre, Charing Cross; C. R. Fielding, Manchester; Barbara Finch, Royal Free; Winifrede M. Fish, King's Coll.; W. Flowers, Leeds; F. J. T. Foenander, Middlesex; W. F. Gaisford and A. W. Gardner, St. Bart.'s; R. C. Germond, Lausanne and London; Winifrede M. Gibson, Charing Cross; G. D. Gillbard, Middlesex; W. L. Gopsill, St. Thomas's; Sarah P. M. Griffiths, Westminster; G. S. Hale, St. Bart.'s; P. M. D. Hart, Univ. Coll.; Lynette Hemmant, King's Coll.; J. U. Human, Guy's; L. E. Jones, St. Thomas's; W. H. M. Jones, Cardiff; P. N. Kapur, London; Frances M. Kenyon, King's Coll.; Kathleen M. Lankester, Royal Free; S. Lerner, Univ. Coll.; H. M. O. Lester, St. Thomas's; S. Levy, Middlesex; Leonora M. K. Lines, Charing Cross; D. A. Lubbock, Univ. Coll.; S. B. Malik, Charing Cross; Dorothy G. Medway, Royal Free; A. L. Moorby, King's Coll.; W. Murphy, Leeds; L. J. McGregor, St. Thomas's; C. C. Mackinnon, Middlesex and Bristol; Margaret C. Malone, King's Coll.; D. R. Martin, Guy's; J. P. Monkhouse, St. Mary's; E. W. Morgan, St. Bart.'s; Josefine W. Nagel, Royal Free; H. A. Nicholls, St. Bart.'s; Kathleen G. Norton, St. Mary's; D. Oliver, St. George's; S. G. Pandit, Bombay; Edith G. Peacock, Charing Cross; S. M. Power, London; E. P. Pratt, St. George's; Fanny Rabinowitz, Charing Cross; M. P. S. Rau, Madras and Middlesex; D. I. Rees, St. Thomas's; Nellie H. Reynolds, King's Coll.; F. E. Roberts, Birmingham; Janet M. Robertson, St. Mary's; E. A. Rucker, Middlesex; K. Samaan, Manchester; H. H. E. Schultz, St. Thomas's; G. Simon, St. Bart.'s; Constance G. Sloan, St. Mary's; Beatrice M. Smithies, Charing Cross; K. A. Soutar, St. Thomas's; A. A. Spiro, Manchester; J. M. Stirling, Charing Cross; K. R. Stokes, St. Bart.'s; Sylvia Sworn, Univ. Coll.; J. E. Swyer and J. S. Symons, London; K. H. Tan, Middlesex; Catherine F. Taylor and Jean S. Thomson, Royal Free; F. S. Thornton, St. Thomas's; J. N. J. L. Uys, St. Thomas's; W. A. Vickers, Liverpool; Iris V. I. Ward, Royal Free; R. L. Waterfield, Guy's; Helen D. Watson and Violet M. Weston, Royal Free; W. S. Whinster, Guy's; J. D. V. Wijeyaratne, King's Coll.; D. P. Williams, Middlesex; Ada R. Winter, Univ. Coll.; and Joan Worsfold, Royal Free.

Midwifery.—N. Ahmed, Bombay and Edinburgh; R. D. Aiyar, London; C. R. Alderson, Univ. Coll.; C. B. Andreae, Guy's; L. Appell, Charing Cross; G. S. Aston, Birmingham; Kathleen A. M. Ayton, Durham; J. C. H. Baird and W. A. Barnes, St. Bart.'s; Sybil K. Batley, Royal Free; W. T. E. Blackmore, London; E. Bowen-Jones, Guy's; Janet M. Breakwell and R. N. Bullock, Birmingham; F. Bunje, St. Mary's; Olive K. Burnett, Royal Free; J. T. Cahill, Middlesex and London; F. F. R. Carreck and F. Carroll, St. Mary's; R. T. Chadwick, St. Bart.'s; J. H. T. Challis, London; M. Chandra, St. George's; Eileen M. Clarke, Royal Free; Kathleen D. Clay-Beckitt, Manchester; H. N. Collier, Guy's; P. V. Crameri, Univ. Coll; K. J. J. Cursetji, Bombay and St. Bart.'s; N. Das, London; S. T. Davies, Univ. Coll.; Mirabel G. Davis, King's Coll.; Winifred de Kok, Royal Free; G. Dietrich, St. Bart.'s; F. R. Dingle, Guy's; Dorothy Durance, Royal Free; R. P. S. Edden, St. Mary's; N. L. Edwards, Manchester; I. A. Evans, Cardiff; J. Evans, Guy's; J. Familton, Durham; W. H. Fernando, Ceylon; A. J. Foote, Sydney and London; R. A. Foucar, St. Bart.'s; E. A. Gerrard, Manchester; J. Goldberg, London; M. Gottfried, St. Mary's; A. S. Gough, Guy's; Gladys Goument, St. Mary's; A. W. T. Green, Middlesex; Margaret K. Green, St. Mary's; H. R. Griffin, Middlesex; Sarah P. M. Griffiths, Westminster; J. L. Groom, Guy's; H. L. Gulati, Charing Cross; L. C. Gunasekara, King's Coll.; Emily M. Hall, St. Mary's; Nellie M. E. Hallinan, Charing Cross; T. S. Hanlin and Z. Hanna, Manchester; Dorothy M. Hanson, Liverpool; T. J. Hargest, Cardiff; M. J. Harker, St. Bart.'s; P. M. D. Hart, Univ. Coll.; A. R. Hill, St. Bart.'s; C. H. Ho, St. Thomas's; D. P. Holmes, Westminster; E. F. Hottinger, St. Mary's; L. E. Houghton, Guy's; G. E. Hughes and J. H. Humphris, St. Bart.'s; N. H. Ibrahim, Durham; A. O. Jacob, Madras; J. N. Jacobson, St. Thomas's; Elvy I. Johnstone, Liverpool; B. P. Jones, Manchester; R. Jones, Charing Cross; T. S. L. Jones and G. F. Kinder, Liverpool; B. Kornblum, Guy's; C. K. Lakshmanan, St. Bart.'s; Kathleen M. Lankester, Royal Free; S. Lerner, Univ. Coll.; C. A. Levy and G. L. M. McElligott, St. Thomas's; H. A. McGregor, St. Bart.'s; W. K. McKinstry, Cambridge and St. Bart.'s; A. C. Macleod and A. J. McMillan, Middlesex; Joan Malleson, Charing Cross; W. N. Maple, St. Thomas's; F. G. Martin, Charing Cross; R. C. May, Guy's; Dorothy G. Medway, Royal Free; P. B. P. Mellows, St. Bart's; R. H. Metcalfe, St. Thomas's; H. M. Mikhail, Univ. Coll.; A. K. Miller and N. A. Miller, St. Thomas's; Ruth L. Milne, Royal Free; D. Mitra, Charing Cross; F. E. Montague, St. Thomas's; Florence I. R. Moore, Royal Free; J. L. Morgan, St. Thomas's; W. S. Morgan, St. Bart.'s; W. Murphy, Leeds; A. N. Nanda, Dundee; Elizabeth H. R. Newboult, Royal Free; Kathleen G. Norton, St. Mary's; E. R. Owen, Liverpool; C. F. Parry and H. L. Peake, Guy's; A. P. Pearce, London; B. Perchman, Charing Cross; J. D. L. Perera, Ceylon and Sheffield; P. H. Perkins, London; R. K. Phillips, Bristol; A. Pierce, Birmingham; W. G. Platt, Leeds; C. C. Po, Guy's; E. P. Pratt, St. George's; Nellie L. Pyman, Charing Cross; M. P. S. Rau, Madras and Middlesex; T. Rees, J. L. Reeve, and D. R. Reynolds, St. Bart.'s; F. T. Ridley, Birmingham; C. E. Roberts, London; K. E. R. Robertson, St. Mary's; V. P. Robinson, Oxford and St. Bart.'s; C. J. Rozario, St. Thomas's; M. Schwartz and J. Shepherd, Univ. Coll.; D. G. Shields, St. Bart.'s; B. S. Singh, Leeds; E. G. Smallbone, Guy's; J. R. Smith, St. Bart.'s; E. F. Stead, London; Lois Stent and Mary Stirk, Manchester; S. V. Strong and A. C. Taylor, Guy's; T. H. Taylor, Leeds; G. A. J. Teasdale, Middlesex; L. Teskey, Toronto and London; D. W. R. Thomas and E. D. Thomas, Middlesex; Jean S. Thomson, Royal Free; Dorothy Tims, Charing Cross; R. S. Tooth, St. Bart.'s; Mary C. Tugman, St. Mary's; N. A. A. van Buuren, Univ. Coll.; A. B. W. van Zyl, Middlesex; J. Viljoen, Manchester; W. F. Waudby-Smith, St. Bart.'s; Iris V. I. Ward and Violet M. Weston, Royal Free; J. D. V. Wijeyaratne, King's Coll.; H. J. Williams, Birmingham; D. B. Wilson, Cambridge and Birmingham; Jessie Wiltshire, Univ. Coll.; R. M. Windeyer, St. Bart.'s; H. Winstanley, Liverpool; F. G. Winterton, St. Bart.'s; K. K. Wood, Manchester; and J. Woolff, St. Thomas's.

Surgery.—R. D. Aiyar, Madras and London; R. G. Anderson, St. Bart.'s; N. A. Arnold and H. M. H. Ashwin, Guy's; A. Ashworth, Liverpool; A. A. Atkins, London; H. M. Ayres, St. Thomas's; R. M. Bates, London; I. C. P. Beauchamp, Guy's; S. A. Belshaw, Middlesex; H. S. Bell, Liverpool; E. E. Benson, Bristol; A. T. Bettinson, St. Bart.'s; W. T. E. Blackmore, London; W. R. Blunt, St. Thomas's; N. W. Bolton, Manchester; G. M. Brooks, Birmingham; J. A. S. Brown, London; O. W. B. Browning, Univ. Coll.; H. Bruce, Leeds; Enid A. Ceiriog-Cadle, Royal Free; M. Chandra, St. George's; Gwendolen S. Chataway, St. Mary's; G. C. W. Clarke, Sheffield; Marion B. Coleman and Victoria M. Crosse, Royal Free; R. W. Cuningham, Guy's; A. J. Daly, London; G. Davies, Guy's; V. H. G. Davies, Middlesex; N. A. Dickinson and N. L. Edwards, Manchester; I. Evans, St. Thomas's; Helen E. Fergusson, Charing Cross; A. K. J. Finch, St. Mary's; A. H. W. Fleming, Manchester; F. J. T. Foenander,

Middlesex; A. J. Foote, Sydney and London; E. A. Gerrard, Manchester; R. Glasser, Liverpool; J. G. Goodman and A. S. Gough, Guy's; R. Green, St. Bart.'s; C. J. Grosch, Middlesex; G. T. Hankey, Guy's; C. G. Harper, Middlesex; S. Harris, St. Thomas's; J. P. Helliwell, St. Mary's; Catherine M. Hext, London; C. H. Highfield, Guy's; J. D. Hindley-Smith, St. George's; G. S. Hirst, Leeds; R. St. J. Honner, Sydney and Middlesex; W. Hughes, Middlesex; D. Imber and F. F. Imianitoff, St. Bart.'s; S. W. Innes-Smith, Sheffield; J. N. Jacobson, St. Thomas's; L. H. Jones, Charing Cross; T. S. L. Jones, Liverpool; G. W. Keele, Univ. Coll.; R. St. J. Kemm, Bristol; H. Kessel, Guy's; G. M. King, King's Coll.; O. F. A. Krause, Guy's; D. F. Lawson, St. Thomas's; W. E. Lishman, Liverpool; J. B. Lloyd, St. Bart.'s; T. J. Lloyd, Cardiff; Aileen I. McMahon, Charing Cross; D. H. Macleod, Middlesex; C. H. Mason, St. Mary's; J. A. A. Mekelburg, Guy's; A. K. Miller and N. A. Miller, St. Thomas's; V. S. Mitcheson, Cambridge and Birmingham; S. K. Montgomery, Univ. Coll.; Florence I. R. Moore, Royal Free; H. Moore, Guy's; W. G. R. Morris, Bristol; Marjorie Murrell and Elizabeth H. R. Newboult, Royal Free; B. V. O'Connor, Middlesex; W. Ogden, St. Bart.'s; Gwynedd M. E. Olive, Royal Free; R. W. L. Pearson, Liverpool; K. R. T. Peiris, King's Coll.; R. A. M. Pennington, Liverpool; S. M. Power, London; A. B. Plant, Guy's; T. B. Prys-Jones, Middlesex; P. E. Pym and W. E. H. Quennell, St. Bart.'s; J. Raisman, Leeds; R. J. Rankin, Cardiff; J. R. Ratcliffe, Guy's; E. W. Riches, Middlesex; A. W. Riddolls, Guy's; T. W. E. Royden, St. Bart.'s; C. J. Rozario, St. Thomas's; H. J. Selby, Guy's; S. Q. Servante, Middlesex; C. F. J. Smith, St. Mary's; J. R. Smith, Cambridge and St. Bart.'s; R. K. Smith and J. S. Spickett, St. Bart.'s; G. H. Steele, Univ. Coll.; Lois Stent, Manchester; Catherine E. Stephen, Univ. Coll.; W. K. Targett, Guy's; J. L. Thomas, Middlesex; O. C. Tobin, London; H. Trafford, Guy's; K. A. Turner, Leeds; L. G. W. Urich and A. B. W. van Zyl, Middlesex; J. Viljoen, Manchester; T. E. Walsh, St. Thomas's; E. C. Warner, Guy's; Helen D. Watson, Royal Free; R. A. K. Wiener, St. Thomas's; E. C. P. Williams, Middlesex; H. G. Wimbush, Guy's; R. M. Windeyer, St. Bart.'s; K. K. Wood, Manchester; H. M. Woodman, King's Coll.; and E. W. C. Wouterz, St. Mary's.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council of the Royal College of Surgeons held on Feb. 12th, Sir John Bland-Sutton, President, in the chair, Mr. Arthur Percy Dodds-Parker, surgeon to Radcliffe Infirmary, Oxford, was elected a member of the Court of Examiners in Surgery in the vacancy caused by the retirement of Mr. John Murray, surgeon to Middlesex Hospital. Mr. James Sherren was appointed Bradshaw Lecturer, and Prof. William Wright, F.R.S., was appointed Thomas Vicary Lecturer for the ensuing year.—The best thanks of the Council were given to Mr. H. H. Hope-Pinker for his presentation of the plaster model of his bust of the late Sir George M. Humphry.—The President reported that a meeting of Fellows would be held at the College on Thursday, July 2nd, at 2.30 P.M., for the election of three Fellows into the Council in the vacancies occasioned by the retirement in rotation of Mr. V. Warren Low, Mr. James Sherren, and Sir John Lynn-Thomas; that notice of the meeting would be given to the Fellows by advertisement and by circular on March 6th; that March 16th would be the last day for the nomination of candidates; and that a voting paper would be sent on March 31st to every Fellow of the College whose address is registered at the College.

Diplomas of Member were conferred upon 208 candidates who have passed the requisite examinations and have complied with the by-laws. The following are the names and medical schools of the successful candidates:—

M. Abse, Cardiff and Univ. Coll.; J. D. Allen, Cape and St. Bart.'s; G. T. Allerton, London; C. A. Amesur, St. Thomas's; Kathleen J. Atkinson, King's Coll.; Margaret A. Bannerman, Royal Free; W. D. Beck, Birmingham; C. E. G. Beveridge, Oxford and St. Bart.'s; O. P. Bewers, St. George's; Anna M. V. Bonhote, King's Coll.; V. H. Boobbyer, St. Mary's; W. A. Bourne, Cambridge and St. Bart.'s; R. N. Brandwood, Guy's; S. Brest, H. F. Brewer, D. A. Brigg and D. J. Brims, St. Bart.'s; R. J. Brocklehurst, Oxford and St. Bart.'s; T. H. P. Brooks, London; Margaret H. Brown, Charing Cross; W. A. Browne, Madras and St. Mary's; Olive B. Buckley, King's Coll.; W. H. Cameron, Toronto and Middlesex; A. F. Chalkley, Leeds; Gwendoline Chave, Royal Free and St. Mary's; H. F. Chillingworth, St. Bart.'s; G. F. Chissell, Middlesex; L. Chodorsky, St. George's; J. Chronnell, Manchester; H. A. Clegg, Cambridge and St. Bart.'s; A. V. Clemmey, Oxford and Guy's; Doris M. Collins, Royal Free; L. N. R. Comty, London; L. C. Cook, Cambridge and St. Thomas's; W. H. M. Cowper, Middlesex; C. P. Craggs, Durham and St. Bart.'s; Dorothy E. Crellin, Bristol; J. Currie, St. Bart.'s; M. Cutner, St. Mary's; Gweneth M. Daniel and Annie E. C. Davies, Westminster; A. L. Davies, Oxford and St. Thomas's; J. R. Davies, St. Thomas's; W. H. Davies, Westminster; A. R. Davison, Cape and St. Thomas's; M. S. Dewhurst, Cambridge and Univ. Coll.; Charlotta D. N. de Wilde, Royal Free and London; G. E. Ellis, St Bart.'s; O. M. Ellis, Cardiff; C. W. Evans, Univ. Coll.; J. Evans, Cardiff and Charing Cross; N. B. Farman, Charing Cross; J. T. Fathi, London; L. Fatti and C. F. Fernando, Univ. Coll.; M. G. Fitzgerald, Cambridge and St. Bart.'s; Dorothea C. Forbes, Royal Free and St. Mary's; G. R. Ford, Guy's; W. S. Fricker, Cardiff and King's Coll.; T. M. Fripp, Guy's; O. P. Giles, Birmingham; G. D. Gordon, Cambridge and St. Thomas's; H. W. Gordon, Cambridge and St. George's; R. A. Grant, Guy's; F. N. Green, Cambridge and Liverpool; A. L. Greenway, Calcutta and King's Coll.; D. L. Greig, Middlesex; J. M. Hall, King's Coll.; Constance I. Ham, Bristol; G. Hamada, Birmingham; J. E. S. Hamilton, Bristol; C. H. Hampshire, Univ. Coll.; A. W. Hanlon, Liverpool; Hans-Raj, King's Coll.; Irene D. F. C. Hastilow, Birmingham; N. H. R. Hatfield, Cambridge and St. Mary's; C. W. Healey, Liverpool; S. Melberg, Zurich and London; A. Helmi, Cairo and St. Thomas's; Freda K. Herbert, King's Coll.; E. Herzberg, Heidelberg and Univ. Coll.; A. E. Hill, Guy's; C. H. Hilliard, Cambridge and St. George's; Minnie E. Hope, Royal Free; E. C. Hudson and D. B. Hughes, London; Katharine E. W. Hulse, Charing Cross; O. R. Humphreys, Cardiff and London; F. S. Hunter, Birmingham, Guy's, and Bristol; O. L. Hutchinson, St. Andrews and London; Joy Hwa, Birmingham; S. Hyman, Leeds; Elizabeth Jacobs, St. Mary's; Kate D. James, Royal Free and St. Mary's; E. J. Jenkins, Birmingham; C. W. W. Jeremiah, Cardiff and Middlesex; D. F. Johnstone, Guy's; Dilys Jones, Westminster; D. L. J. Kahawita, Ceylon and King's Coll.; L. A. Key, Cambridge and St. Thomas's; Caroline B. Kibble, Royal Free; C. T. Kitching, Cape and St. Thomas's; W. R. Kusel, St. Thomas's; Marjorie A. M. Lambert, Royal Free; G. S. Landon, Guy's; M. C. Lavin, London; H. Levy, Cape and St. Bart's; H. Lewis, Guy's; A. C. Liesching, St. Bart's; L. A. N. Line, Birmingham; W. H. G. M. Ling, Edinburgh and St. Mary's; Madeline R. Lockwood, Univ. Coll.; A. C. Lysaght, Bristol and Guy's; Catherine B. McArthur, Roy. Free; S. McClements, King's Coll.; F. G. Macdonald, St. Thomas's; Dorothy F. McIntosh, Charing Cross; J. H. Macpherson, King's Coll.; Helena M. J. McQuaid, St. Mary's; R. G. Maliphant, Univ. Coll.; J. P. Marsden, Cambridge and St. Thomas's; G. R. Marshallsay, St. Mary's; E. L. Martin, Charing Cross; A. W. C. Mellor, Cambridge and St. Bart's; C. P. Miller, St. George's; F. C. Miller, Guy's; G. J. Morris, Cardiff and Middlesex; C. F. Morrison, Guy's; A. M. Murray, Middlesex; W. R. Nash, Cardiff and St. Bart's; Margaret I. Neal, London; E. L. Newell, Oxford and St. Thomas's; R. A. Newsom, King's Coll.; H. W. Nicholson, Cambridge and St. Thomas's; J. A. Noot, Cardiff; R. A. Norman and J. N. D. O'Rafferty, Guy's; J. V. O'Sullivan, Galway and London; Evelyn D. Owen, Cardiff and Charing Cross; G. W. C. Parker, Cardiff and St. Bart's; A. E. Parkes, St. Bart's; W. Parry-Jones, London; R. Paton, Cardiff and Middlesex; V. Patrick, Manchester; F. L. Patterson, London; Gladys L. Pearson, Royal Free; A. D. Pegg, St. Thomas's; Gwyneth M. Pennant, Cardiff and King's Coll.; H. C. Pierce, Cambridge and Liverpool; C. P. Pinckney, Cambridge and St. George's; L. W. Proger, Middlesex; D. C. Prowse, Bristol; R. S. Pyrah, Leeds; V. I. Raman, Madras and London; C. Rankin, Liverpool; M. D. Rawkins, St. Bart's; J. T. Rees, Cardiff; Olwen M. Richards, Cardiff and Charing Cross; J. T. C. Roberts, Liverpool; J. J. R. Robinson, St. Thomas's; Wemyss C. Robinson, King's Coll.; G. F. Rowbotham, Manchester; Alysoun H. Rowntree, Royal Free; A. B. Rufail, Cairo and King's Coll.; K. G. W. Saunders, St. Thomas's; S. D. Schultz, Manitoba and Middlesex; C. E. Sharp, McGill and Univ. Coll.; T. A. Shaw, Guy's; Francez E. Smith, Charing Cross; S. M. T. Smith, Bristol; A. D. Soares, Bombay; K. H. Southall, Univ. Coll.; I. P. Spurrell, Guy's; Ethel L. A. Stamberg, Royal Free; B. G. Staniland, London; R. O. Stern, Charing Cross; D. D. S. Stewart, King's Coll.; P. Subbaramayya, Madras and London; A. F. Taylor, St. Bart's; E. J. Thomas, Cardiff and St. Thomas's; J. D. S. Thomas, Guy's; W. S. Thomas, Univ. Coll.; E. Thompson, St. Thomas's; W. R. Thrower, St. Bart's; T. G. Tresidder, Guy's; E. A. Trim, Cambridge and St. Thomas's; V. C. Tughan, Univ. Coll.; Beatrice M. Upshohn, Madras and Royal Free; L. C. D. van der Borght, Ghent and Univ. Coll.; H. Van der Post, Guy's; G. B. W. Walker, Cambridge and St. Mary's; R. A. Walsh and L. B. Ward, St. Bart's; Catherine Watterson, Univ. Coll.; H. V. Wells, Charing Cross; J. Whillis, Durham; F. L. White, London; C. R. Williams, Leeds and London; D. G. Williams, Cardiff and King's Coll.; E. R. Williams, Cardiff; H. H. Williams, Liverpool; D. A. Wilson, Middlesex; Emily A. C. Wilson, Charing Cross; H. M. Worth and C. L. Worthington, Guy's; Annie Yoffa, Cornell and Royal Free; G. C. Young, St. George's; and J. C. Young, Guy's.

The diploma of Fellow was also conferred upon Frederick H. Scotson, Manchester University and St. Bartholomew's Hospital, and Clement Sturton, Cambridge University and St. Bartholomew's Hospital, who have previously passed the requisite examinations and have now attained the age of 25 years.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE: APPOINTMENT OF RHODESIAN RESEARCH FELLOW.—In connexion with the arrangements recently entered into by the London School of Hygiene and Tropical Medicine with the Government of Southern Rhodesia for the development of research work in that country, the London School has appointed for a term of three years Dr. G. R. Ross, M.B., Ch.B., D.P.H., Ph.D., to be Rhodesian Research Fellow.

UNIVERSITY OF LONDON.—A lecture entitled the Relation of Paralysis Agitans to the Parkinsonian Syndrome of Epidemic Encephalitis will be given in the Lecture Hall of the Royal Society of Medicine, 1, Wimpole-street, W., by Prof. R. Cruchet, professor of pathology and general therapeutics in the University of Bordeaux, at 5 P.M., on Wednesday, Feb. 25th. The chair will be taken by Sir Humphry Rolleston. The lecture, which will be delivered in English and illustrated with lantern slides, is addressed to advanced students of the University and to others interested in the subject. Admission is free, without ticket.

Three lectures on the History of Medicine will be delivered at University College Hospital Medical School by Dr. Charles Singer, on Thursdays, March 5th, 12th, and 19th, at 4.15 P.M. The subjects of the lectures are: (1) History of Influenza; (2) History of Diphtheria; (3) History of Typhoid Fever. The lectures are open to all medical students of the University of London.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Special attention is directed to the informal discussion on post-graduate study, open to all members of the medical profession in London, including, of course, Members of the Fellowship of Medicine from the Provinces and Overseas, on March 18th, at 6 P.M., at 1, Wimpole-street, London, W.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The seventeenth meeting of the Commission was held at the Home Office, Whitehall, on Feb. 12th, Lord Lawrence of Kingsgate in the chair. Mr. C. H. Waring, representing the group of Catholic Approved Societies, gave evidence on questions of additional benefits and insurance of married women. Thereafter the examination of Mr. F. W. Daniels, chairman, and Mr. P. Rockliff, secretary of the Joint Committee of Approved Societies, was continued and concluded. The National Insurance Beneficent Society, represented by Mr. G. W. Canter and Mr. Rockliff, was then heard on the question of its administration of treatment benefits. Proof copies of the oral evidence and the relative statement submitted at the meeting of Jan. 29th, are now on sale at H.M. Stationery Office (2*s.* 3*d.*).

HUNTERIAN SOCIETY: ANNUAL DINNER.—The annual dinner of this society was held on Feb. 12th at the Hotel Victoria, London. Mr. W. H. Carson, the President, was in the chair, and about 150 Fellows and their guests were present. "The Memory of John Hunter" was proposed by the President, and Sir Francis Newbolt gave the toast of "The Hunterian Society," to which the President responded. Sir Bruce Bruce-Porter paid a tribute to the Lord Mayor and the Corporation of London, and the Lord Mayor replied. The toast of "The Guests and Sister Societies" was proposed by Dr. W. Langdon Brown, and was acknowledged by Lord Carson, the Lord Bishop of London, and Sir StClair Thomson. Dr. Ernest Young proposed "The Chairman." During the evening a pleasant programme of songs was given by Mr. A. Rosenörn-Lanng, accompanied by Miss Marion Farr.

PUBLIC HEALTH ADMINISTRATION IN LIVERPOOL.—At a meeting of the Liverpool Medical Institution on Feb. 12th Dr. E. W. Hope gave a sketch of the sanitary advances of Liverpool, and of the measures taken to ameliorate the conditions resulting from the singularly rapid growth of the city at a time when sanitation was very imperfectly understood and when no legislative powers existed to check or remove the rapidly growing evils. Much of the earlier local legislation had formed the basis of the Public Health Acts of the country, but the sanitary necessities of Liverpool had made necessary many applications to Parliament. The great housing operations, both within the city and in its outskirts, were illustrated, as well as the measures which led to the present unstinted water-supply; transported from the purest sources 60 miles away, it was now, he said, available for delivery to every floor in every house at the moderate cost of 1¼*d.* a ton. The measures which lead to the establishment of the present efficient hospital and sanatorium system were traced, and it was pointed out that the term "Infectious Hospital," as applied to properly spaced institutions upon an area of some 200 acres, was of very different significance to the term as applied to hospitals of half a century ago. An account was also given of the development of the individual and as well as the environment. Hygiene, uses of health visitors, antenatal and postnatal centres, maternity homes, infant welfare centres, control of food-supplies, and other important accessories were dealt with. It was with a view to making sanitary problems intelligible and interesting to the general public that the University School of Hygiene was established.

THE sum raised on Poppy Day, 1924 (Earl Haig's Appeal for Ex-Service Men of all Ranks), was, up to the end of December last, £314,598.

SOCIETY OF M.O.H.'S: MATERNITY AND CHILD WELFARE GROUP.—Attention is drawn to the date and time of the meeting of this society, as announced in our Medical Diary of this week. The customary date and time of these meetings have been changed in the hope that the new arrangement will prove more convenient to the members.

DONATIONS AND BEQUESTS.—By the will of the late Dr. Herbert Williamson, of Queen Anne-street, Cavendish-square, W., the testator left £1000 to the endowment fund of the Medical College of St. Bartholomew's Hospital; and £200, his medical books, and surgical instruments to his colleague, Dr. John Davis Barris.

PUBLIC HEALTH (PRESERVATIVES, &C., IN FOOD) REGULATIONS, 1925.—The Minister of Health has caused draft Regulations to be prepared to give effect to the principal recommendations of the recent Departmental Committee on the Use of Preservatives and Colouring Matters in Food. Copies of the draft Regulations entitled "Draft, dated Feb. 17th, 1925, of the Public Health (Preservatives, &c., in Food) Regulations, 1925, proposed to be made by the Minister of Health" may be purchased directly or through any bookseller from H.M. Stationery Office, Adastral House, Kingsway, London, W.C. 2. Any representations on the draft Regulations should be sent to the Secretary to the Ministry within a period of 40 days from this date. The Regulations to be made by the Minister of Health will apply in England and Wales. Regulations in similar terms applying to Scotland will be made by the Scottish Board of Health. Copies of the draft of these Regulations may be purchased from H.M. Stationery Office, 120, George-street, Edinburgh.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee 20 cases were considered and £378 voted to 16 applicants. The following is a summary of some of the cases relieved:—

Widow, aged 47, L.M.S.S.A. Lond. who practised in Wales and died in 1924. Since husband's death applicant has tried to support herself and children by keeping a boarding house, but this failed, and she is likely to obtain a post as music mistress in a school on the South Coast when she can have her small daughter, aged 4, with her. Applicant asks for £12 to cover three weeks' board and lodging in London, fares for self and child to settle up her affairs in the Midlands before taking the post. Voted £20.

Widow, aged 37, of M.B. Glasg. who practised in Lancashire and died in 1922. Applicant is left with three children, aged 10, 8, 6½. Her total income is 30*s.* a week and she has been only able to earn very little by needlework. The small house they live in is too small to let in any way. Applicant was in hospital during the autumn to undergo an operation. Has run into debt, and school fees are owing for autumn term. Voted £5 and £20 in four instalments.

Widow, aged 87, of M.R.C.S. Eng. who practised in Bristol and died in 1885. Applicant is bedridden and has now to have a nurse to look after her at night as the daughter, aged 57, is only able to do so during the day. Applicant's total income is £100 and the rent is £39 per annum. Circumstances do not permit sufficient food at times and very little firing, as there is not enough money to buy coal. Voted £5 and £26 in four instalments.

Widow, aged 71, of L.R.C.P. Edin. who practised in London and died in 1918. Applicant has cataract and she is only able to do a little knitting by which she earned £3. Her youngest daughter has to look after her mother and she is only able to do a little spinning. The applicant's income is £84 a year from property and the daughter's £10. Rent 12*s.* a week for three rooms. Voted £18 in 12 instalments.

Daughter, aged 41, of M.B. Edin. who practised in Australia and died in 1883. Applicant is a trained singer and until she was taken ill earned quite a good income as a singer. The Fund have helped her mother from time to time and who now has an Epsom Pension. As applicant is suffering from chest trouble the doctor has ordered her to Switzerland and she is asking the Fund to help her with her expenses out there. Voted £20.

M.R.C.S. Eng., 1893, aged 53. Dependent on locumtenens work entirely. Nearly two years resident in hospital for abscess of rectum. Brothers and sisters allowed him 12*s.* a week while in hospital. Brother is unable to keep applicant, and a small fund raised for him enables applicant to pay his brother £1 for board and lodging. Applicant asks for grant to buy dressings and to pay for colotomy belt and travelling expenses to and from hospital. Voted £5 and £26 in 12 instalments.

Daughters, aged 79 and 78, of L.A.H., 1836 who practised in London and died when applicants were quite young. The two sisters lived in a free cottage for 14 years and their income amounted to £66 a year each, including the Old Age Pension. The youngest one suffers from loss of memory and the elder from Bright's disease and paresis of both legs. These ladies have had to be removed to the Cottage Hospital at a cost of 2 guineas a week. Voted £26 in 12 instalments each.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, K.B.E., M.S., at 11, Chandos-street, Cavendish-square, London, W.1.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

New Bills Presented.

THE following new private Members' Bills were introduced and read a first time in the House of Commons on Friday, Feb. 13th: Lieut.-Col. Lambert Ward: A Bill to provide for the permanent adoption of Summer time. Sir Geoffrey Butler: A Bill to make further provision for the adoption of Children by suitable persons. Mr. Rennie Smith: A Bill to provide for the abolition of capital punishment and to substitute other punishments therefor. Mr. Womersley: A Bill to amend the Public Health Acts 1875 to 1907 and the Baths and Washhouses Acts 1846 to 1899 in respect of matters for which provision is commonly made in local Acts and for other purposes relating to the public health. Mr. Young: A Bill to amend the Blind Persons Act 1920. Major George Davies: A Bill to amend the Sale of Food and Drugs Act 1875 by regulating the liability of milk sellers in respect of milk adulteration. Capt. Bowyer: A Bill to amend the Bastardy Laws.

The following Government measures were also introduced and read a first time: Sir W. Joynson-Hicks (Home Secretary): A Bill to amend the law with respect to guardianship and marriage of infants: Sir J. Gilmour (Secretary for Scotland): A Bill to extend further the duration of the Poor Law Emergency Provisions (Scotland) Act 1921 and to amend certain provisions of that Act as amended by the Local Authorities (Emergency Provisions) Act 1923 and the Poor Law Emergency Provisions Continuance (Scotland) Act 1924; and Bill to authorise local authorities under the Public Health (Scotland) Act 1897 to make arrangements for providing medicines and treatment to persons suffering from diabetes.

HOUSE OF COMMONS.

WEDNESDAY, FEB. 11TH.

Progress in Housing.

Mr. TREVELYAN THOMSON asked the Minister of Health the number of houses at present in course of construction under the various State-assisted schemes and the number under construction in February last.—Sir KINGSLEY WOOD (Parliamentary Secretary for Ministry of Health) replied: Particulars are not yet available as to the number of houses in course of construction on February last, but the following table shows the position on Jan. 1st, 1924 and 1925:—

Scheme.	Jan. 1st. 1924.	1925.
Housing, Town Planning, &c., Act, 1919	4,873	1,658
Housing, &c., Act, 1923	14,102	49,196
Housing (Financial Provisions) Act, 1924	—	3,173
Totals	18,975	54,027

New Factory Legislation.

Mr. RAINE asked the Home Secretary whether it was the intention of the Government to introduce a Bill to consolidate the enactments relating to factories during the present Session; and, if so, whether the Bill would differ materially from the Bill introduced for that purpose in the last Session of Parliament.—Sir WILLIAM JOYNSON-HICKS replied: It is hoped, as announced in the King's Speech, to introduce a Bill this Session to amend and consolidate the Factory and Workshop Acts, but I am not in a position to make any statement as to the provisions of the Bill, which have not yet been settled.

THURSDAY, FEB. 12TH.

Experimental Houses.

The House went into Committee of Supply on a Supplementary vote of £10 for the Salaries and Expenses of the Ministry of Health, including grants and other expenses in connection with housing, Capt. FITZROY in the chair.

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) referred to the grant towards the cost of demonstration houses. He said that so far as arrangements had already been made it was proposed that the local authorities should erect three kinds of specimen houses—first, the Weir house made by G. & J. Weir, Ltd., of Glasgow; secondly, the Telford type of house made by Messrs. Braithwaite & Co., of West Bromwich, and thirdly, the type made by Messrs. James Wild & Co., of Manchester. These tests were being made as a result of the recommendation of the expert committee presided over by Sir Ernest Moir and set up by the late Minister of Health. That report contained the signature of George Hicks, General Secretary of the Amalgamated Building Trade Workers. The cost to the local authorities in relation to these experiments had been fixed at a flat price. The price of the Weir houses to each local authority was £400, the authority themselves providing the foundations, paths, drainage roads, &c.; the price of the Telford house was £450, the local authority providing the foundations, &c., outside the concrete foundations. The price of the Wild house had yet to be fixed. The Minister of Health was to contribute to the cost of these experimental Weir houses the sum of £200, the "all in" cost being about £525. None of these experimental houses would come under the special contributions laid down in the 1924 Housing Act. In a very short time now 25 local authorities up and down the country would be erecting these houses, which were regarded by the Minister of Health as a temporary and valuable contribution to the housing problem. At the present there were some 199,000 houses authorised, of which 52,000 were completed at the beginning of the year. That left 150,000 authorised houses to be built. These would take, looking at the matter in the most favourable light, until the autumn of 1926 to complete. Under these circumstances very few people would say that these experiments ought not to be made.

Mr. A. GREENWOOD (who was Parliamentary Secretary to the Ministry of Health in the Labour Government) complained that the Government had been too precipitate in giving an advertisement to the Weir type of house over other types.

Mr. VIANT, another Labour Member, said that the steel house could never be vermin proof, and the result of their erection would be that there would speedily be more slum areas than existed at present.

Lt.-Col. FREMANTLE said that if those who criticised the proposed experiments in new methods of house construction had had the control of scientific research in the last 50 years there would have been no progress in medical science. It was because researchers, whether in science or practical life, were prepared to take risks that they were able to get an advance. He agreed with many of the critics of steel houses that on the face of them they were not likely to be a permanent solution of the housing problem. In his experience both as a medical officer and on the London County Council he had been face to face with experiments of almost every kind and the result almost always was that he, like the Persian philosopher, "Came out by the same door as in I went." But they must go on with the experiments. The steel house was only one experiment out of many, but it was one which on the face of it must stand as offering a golden opportunity for meeting the present housing need.

The debate was adjourned till the following day when the vote was agreed to without a division.

Ex-Service Men in Mental Hospitals.

Col. Sir ARTHUR HOLBROOK asked the Minister of Pensions, whether his attention had been called to the fact that the London County Council were contemplating proceedings to enforce payment by boards of guardians who had refused payment hitherto for the maintenance in mental hospitals of ex-Service patients who had become chargeable to the boards; and whether he would consider taking such steps as might be necessary to ensure that ex-Service patients mentally affected as the result of service in the war should be maintained at the expense of the nation.—Major G. C. TRYON replied: The cost of maintenance in Mental Hospitals of ex-Service Men, whose condition was caused by their war service, is, and always has been, borne by my Department. If, however, as I gather the cases which my hon. and gallant friend has in mind, are certain cases in which the men's unfortunate condition has been ascertained not to be due in any way to war service, the suggestion made is not one that concerns my Department.

Medical Men and Overseas Military Service.

Sir ARTHUR HOLBROOK asked the Minister of Pensions whether he would consider the desirability of conceding the principle that temporary full-time medical men in the service of the Ministry of Pensions who served overseas during the late war, and especially if they were invalided or disabled in consequence of their service, should be retained when it was found necessary to reduce the numbers serving, in preference to those temporary full-time medical men who did not serve overseas.—Major G. C. TRYON replied: The chief considerations in determining the continued employment of medical officers in the Ministry of Pensions are efficiency and the possession of the necessary qualifications for the duties required to be performed. Subject to those considerations, preference is given to an officer with overseas service, more especially if he has a war disability, over one with home service only.

Polycythæmia and Workmen's Compensation.

Colonel WEDGWOOD asked the Home Secretary whether the occurrence of the comparatively rare disease of polycythæmia in direct connection with workers in ammonium sulphate production constituted this disease an industrial disease; and, if so, would he have the disease scheduled as

such under the Workmen's Compensation Act, 1906, so that these very painful cases could receive some compensation.—Sir W. JOYNSON-HICKS replied: I have only heard of one case of this disease the cause of which is obscure, and there is no information at present before me which would justify its being classed as an industrial disease.

Child Adoption.

Lieut.-Col. HEADLAM asked the Secretary of State for the Home Department whether the Departmental Committee on Child Adoption, presided over by Mr. Justice Tomlin, had presented a report; and, if not, when such Report might be expected.—Sir W. JOYNSON-HICKS replied: The Committee has not yet presented a report and I am unable to say when the Report may be expected. I understand that the committee has not yet finished taking evidence.

Legitimacy Bill.

Capt. BOWYER asked the Prime Minister whether he would introduce as soon as possible the Legitimacy Bill.—Sir W. JOYNSON-HICKS (Home Secretary) replied: I hope that it may be possible to introduce this Bill in another place at an early date.

Dwelling-Houses Used as Factories.

Capt. GARRO-JONES asked the Minister of Health what steps he proposed to take to meet the representations of local authorities in London urging the passage of a Bill to prevent the user of dwelling-houses as factories or workshops.—Mr. NEVILLE CHAMBERLAIN replied: I have had under consideration the representations referred to. One effect of the Rent Restriction Acts is that conversions of this kind are strictly limited. It would appear, therefore, that the matter is not of urgency, but I should be prepared to look into it further on receipt of evidence to the contrary.

Preservatives in Food.

Capt. GARRO-JONES asked the Minister of Health whether in view of the widespread support which the Report of the Departmental Committee on the use of preservatives and colouring matter in food had received, and in view of the specific nature of the committee's conclusions, he could tell the House if he would introduce legislation at an early date to give effect to those conclusions.—Mr. NEVILLE CHAMBERLAIN replied: I am proposing to publish at an early date draft regulations designed to give effect to the majority of the committee's recommendations which, I am advised, can be carried out without legislation.

Unemployment Benefit for Small-pox Patients.

Miss WILKINSON asked the Minister of Labour whether he was aware that the Middlesbrough labour exchange had refused to pay unemployment benefit to two men suspected of having been in contact with small-pox cases, in spite of the offer of the local sanitary authority to provide proper safeguards; and whether he would give instructions for the benefit and arrears to be paid to these men.—Sir ARTHUR STEEL-MAITLAND replied: In the cases referred to it was necessary to obtain a decision from the Chief Insurance Officer as to whether benefit was payable and there was also some difficulty about attendance at the Exchange, owing to possible risk of infection. The decision was in favour of the two applicants and arrangements were made for all outstanding benefit to be paid last Tuesday.

London Street Accidents.

Mr. NAYLOR asked the Minister of Transport whether the Traffic Advisory Committee was considering measures for the prevention of fatal and other accidents in the streets of London.—Col. W. ASHLEY replied: My Department is now being furnished with particulars of all street accidents in the London Traffic Area, in which vehicles are involved or which are alleged to be due to the condition of the road. All practicable steps are, and will be, taken to remove avoidable causes of risk. All the measures recommended by the London Traffic Advisory Committee for the improvement of traffic conditions in London will, I hope, tend to make the streets safer both for pedestrians and for vehicles.

Insurance Patients and Payments to Hospitals.

Mr. FORREST asked the Minister of Health whether he was aware that insured persons with no dependants were enabled at the present time to enter hospitals for treatment and then at the end to receive lump sums from friendly societies in respect of benefit, and that very often these sums were not employed to any profitable purpose, while the hospital received nothing; and whether under the circumstances he would consider an alteration of the law which would enable societies who have insured men on their books to deduct a portion of the lump sum payment due to them in these cases and make a payment from it to the hospitals for the services rendered.—Mr. NEVILLE CHAMBERLAIN replied: Except in the case of institutions maintained out of public funds, an Approved Society has power under the existing law to make a payment to a hospital out of the amount of benefit accruing in respect of a member, having no dependants, who receives treatment in the hospital. I have no information as to the extent to which payments are in fact made under this power, but considerable sums are paid to hospitals by Approved Societies every year out of their National Health Insurance funds, and the whole question of the relation of the hospitals to the National Health Insurance scheme is one which will no doubt be considered by the Royal Commission on National Health Insurance which is now sitting.

MONDAY, FEB. 16TH.

Medical Facilities in Palestine.

Lord COLUM CRICHTON-STUART asked the Secretary of State for the Colonies what European medical assistance was available for the families of British officials employed in the mandated territory of Palestine; and whether facilities could be given to one or more of the Government medical officers to accept as patients members of the families of such officials.—Mr. AMERY replied: The medical practitioners licensed by the Palestine Government include 30 British doctors and some 150 others of European and American extraction. I therefore see no need for any special action on the lines suggested in the second part of the question.

TUESDAY, FEB. 17TH.

Tuberculosis Statistics.

Mr. NAYLOR asked the Minister of Health the total number of cases of tuberculosis notified to local municipal dispensaries; the number of cases notified receiving institutional treatment; and the number of beds available for the cases reported during the last three years for which returns were available.—Mr. NEVILLE CHAMBERLAIN replied: As regards the first part of the question, I may point out that formal notifications of tuberculosis are made to the medical officers of health of sanitary districts, and that although the medical officers of tuberculosis dispensaries receive lists of the notifications, only a proportion of the notified cases are applicants for treatment by local authorities. The number of cases of tuberculosis notified in England and Wales during each of the last three years for which returns are available is as follows: 1921, 71,702; 1922, 69,259; 1923, 79,388. The last figure includes cases of which the medical officers of health became aware otherwise than by formal notification and is not, therefore, strictly comparable with the figures for 1921 and 1922. As regards the remaining parts of the question, the following table shows as regards England and Wales (*a*) the number of tuberculous persons receiving treatment in residential institutions from local authorities, and (*b*) the number of beds in approved residential institutions, on the dates shown:—

	(*a*) *Persons.*	(*b*) *Beds.*
Jan. 1st, 1923	15,563	20,629
„ 1924	16,918	21,419
„ 1925	18,158	22,086

Death-rates per 1000.

Mr. NAYLOR asked the Minister of Health the death-rate from all causes per 1000 persons for the last year for which returns were available; and the death-rate from tuberculosis per 1000 persons for the same period.—Mr. NEVILLE CHAMBERLAIN replied: For 1923, the last year for which both rates are as yet available, the figures are as follows: Death-rate from all causes per 1000 persons, 11·582; death-rate from tuberculosis (all forms) per 1000 persons, 1·062.

FOREIGN DECORATIONS.—The King has given to Dr. Alexander Jeremiah Orenstein, C.M.G., His Majesty's Royal licence and authority to wear the Cross of Chevalier de l'Ordre de la Couronne, which decoration has been conferred upon him by His Majesty the King of the Belgians in recognition of valuable services rendered by him in combating malaria in the Katanga province of the Belgian Congo.

THE IVORY CROSS: NATIONAL DENTAL AID FUND.—To mark the tenth anniversary of the organisation of the Ivory Cross a special effort is being made to enrol 10,000 new members, and an appeal has been issued signed by the Duchess of Portland and the Marquess of Salisbury who are respectively President and Chairman of the Council. The organisation provides skilled dental treatment for poor people, and since its foundation in 1914 over 100,000 patients have been treated, while there is now a waiting list of some 2000. The average administrative cost is only about 8 per cent. per annum of the income collected. Subscriptions and applications for membership should be addressed, The Marquess of Salisbury, 10, Henrietta-street, London, W.1.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

THE ROYAL SOCIETY, Burlington House, Piccadilly, W.
THURSDAY, Feb. 26th.—4.30 P.M. *Papers to be read:* Prof. E. H. Starling and E. B. Verney: The Secretion of Urine, as Studied on the Isolated Kidney. F. Eichholst and Prof. E. H. Starling: The Action of Inorganic Salts on the Secretion of the Isolated Kidney. G. V. Anrep: A New Method of Crossed Circulation. (Communicated by Prof. E. H. Starling.) G. V. Anrep and I. de B. Daly: The Output of Adrenalin in Cerebral Anæmia, as Studied by Means of Crossed Circulation. (Communicated by Prof. E. H. Starling.) G. V. Anrep and Prof. E. H. Starling: Central and Reflex Regulation of the Circulation. K. Furusawa: Muscular Exercise, Lactic Acid, and the Supply and Utilisation of Oxygen. Part IX. Muscular Activity and Carbohydrate Metabolism in the Normal Individual. (Communicated by Prof. A. V. Hill.)—*Papers to be read in Title only:* A. Hunter and J. A. Dauphinee: Quantitative Studies Concerning the Distribution of Arginase in Fishes and other Animals. (Communicated by Dr. H. H. Dale.) A. Hunter and J. A. Dauphinee: An Approximative Colorimetric Method for the Determination of Urea with an Application to the Detection and Quantitative Estimation of Arginase. (Communicated by Dr. H. H. Dale.) J. J. R. Macleod and N. A. McCormick: The Effect on the Blood-sugar of Fish of Various Conditions, including Removal of the Principal Islets (Isletectomy).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Feb. 23rd.

ODONTOLOGY: at 8 P.M.
Paper:
Mr. F. N. Doubleday: A Report upon Some Drugs and Solutions Used in Local Anæsthesia.
Experimental evidence will be shown at 7.30 P.M.

Tuesday, Feb. 24th.

GENERAL MEETING OF FELLOWS: at 5.30 P.M.
Ballot for Election to the Fellowship (names already circulated).

MEDICINE: at 5.30 P.M.
Clinical Meeting at the Westminster Hospital.
Tea will be served at 5 P.M.

Wednesday, Feb. 25th.

COMPARATIVE MEDICINE: at 5 P.M.
Paper:
Dr. Nathan Raw: Immunisation against Tuberculosis in Man and Animals.

Thursday, Feb. 26th.

EPIDEMIOLOGY AND STATE MEDICINE: at 5.30 P.M.
Paper:
Dr. William Robertson (M.O.H. Edinburgh): The Preventive Control of Diphtheria.

UROLOGY: at 8.30 P.M.
Papers:
Dr. Archer and Dr. Robb: The Tolerance of the Body for Urea in Health and Disease.
To be followed by a Discussion in which Dr. Hugh MacLean, Dr. G. A. Harrison, and Dr. de Wesselow will take part.
Mr. K. McFarlane Walker: A New Diathermy Punch Operation for Prostatic Obstruction.

Friday, Feb. 27th.

STUDY OF DISEASE IN CHILDREN: at 5 P.M. (Cases at 4.30 P.M.)
Cases will be shown by Dr. W. M. Feldman, Dr. Bernard Myers and others.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Feb. 23rd.—8.30 P.M., Sir G. Lenthal Cheatle: The Early Stages of Pathological Hyperplasia in the Breast, with special reference to Cysts and Their Danger.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.
FRIDAY, Feb. 27th.—8.30 P.M., Continuation of Discussion on The Vaccine Therapy of Gonococcal Infections. Papers by Prof. J. W. H. Eyre and Dr. David Thomson.

SOCIETY OF MEDICAL OFFICERS OF HEALTH (MATERNITY AND CHILD WELFARE GROUP), 1, Upper Montague-street, Russell-square, W.C.
FRIDAY, Feb. 27th.—5.30 P.M., Mr. Somerville Hastings: Measures to Prevent Aural Defects.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.
MONDAY, Feb. 23rd.—5 P.M., Dr. G. W. De P. Nicholson: The Nature of Tumour Formation.
WEDNESDAY.—5 P.M., Second Lecture.
FRIDAY.—5 P.M., Third Lecture.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Feb. 23rd, to SATURDAY, Feb. 28th.—NORTH EASTERN POST-GRADUATE COLLEGE (Prince of Wales's General Hospital, Tottenham, N.). Intensive Course in Medicine, Surgery, and the Special Departments. Second week. With the exception of Saturday, work will begin at 10.30 A.M. and continue until 5.30 P.M., and will include Demonstrations, Medical and Surgical Clinics, Operations, and opportunity for study in the Special Departments.—LONDON LOCK HOSPITAL, 91, Dean-street, W. Comprehensive Course, Clinical work daily, and Lectures.—ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square, W.C. Demonstrations daily in the various departments. Pathological Demonstrations arranged for, and Tuesday and Thursday Special Lectures. Tickets for this particular Course from the Fellowship.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens, N.W. Tuesday and Thursday, 2 P.M., Clinical Demonstrations by Dr. G. C. Low and Dr. Manson-Bahr.

UNIVERSITY OF LONDON.
WEDNESDAY, Feb. 25th.—5 P.M. (in the Lecture Hall of the Royal Society of Medicine, 1, Wimpole-street, W.), Dr. R. Cruchet, Professor of Pathology and General Therapeutics in the University of Bordeaux: The Relation of Paralysis Agitans to the Parkinsonian Syndrome of Epidemic Encephalitis. (In English.)

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Addison: Surgical Wards.
TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
WEDNESDAY.—11 A.M., Medical Registrar: Medical Wards. 12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Owen: Medical Out-patients.
THURSDAY.—11 A.M., Sir Henry Simson: Gynæcological Wards. 12 noon, Mr. Sinclair: Abdominal Surgery (lecture). 2 P.M., Mr. MacDonald: Genito-Urinary Dept.
FRIDAY.—11 A.M., Dr. McDougal: Electrical Dept. 12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.
SATURDAY.—9.30 P.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: FEB.–MARCH, 1925.
CLINICAL LECTURES AND DEMONSTRATIONS.
MONDAY, Feb. 23rd.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Myasthenia Gravis: Dr. Riddoch.
TUESDAY, Feb. 24th.—2 P.M., Out-patient Clinic: Dr. Adie. 3.30 P.M., Symptomatology of Cerebral Tumours: Dr. Grainger Stewart.
THURSDAY, Feb. 26th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Methods of Testing the Eighth Nerve (in O.P. Department): Mr. Just.
FRIDAY, Feb. 27th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Common Causes of Recurrent Vertigo: Mr. Sydney Scott.
COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.
THURSDAY, Feb. 26th.—12 noon, The Cerebro-Spinal Fluid Physiology and Pathology: Dr. J. G. Greenfield.
COURSE OF LECTURES AND DEMONSTRATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.
MONDAY, Feb. 23rd.—12 noon, Motor System, Pyramidal and Extra-Pyramidal: Dr. Hinds Howell.
The Fee for this Course will be £2 2s.
Dr. H. J. Macbride will give a COURSE OF EIGHT CLINICAL DEMONSTRATIONS chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays, if sufficient entries are received. The Fee for this Course will be £2 2s.
COURSE OF LECTURES AND DEMONSTRATIONS ON THE NEUROLOGY OF THE EYES.
WEDNESDAY, Feb. 25th.—3.30 P.M., The Optic Nerve: Mr. Leslie Paton.
Applications for this Course should be made early. Fee £5 5s. if taken as a separate Course, or £3 3s. if taken with the General Course.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M. or at such other times as may be announced.
Any part of the Course may be taken separately. Special arrangements will be made for those unable to take the whole Course.
Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.
J. G. GREENFIELD, Dean of Medical School.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Feb. 26th.—4 P.M., Dr. Poynton: Arthritis in Childhood.

NORTH-EAST LONDON POST-GRADUATE COLLEGE
Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Feb. 23rd.—4.30 P.M., Dr. H. W. Barber: Principles of Treatment of Skin Disease.
TUESDAY.—4.30 P.M., Dr. J. Metcalfe: X Ray Findings in Disease of the Heart and Aorta (lantern).
WEDNESDAY.—4.30 P.M., Dr. P. Manson-Bahr, D.S.O.: The Diagnosis of the Dysenteries.
THURSDAY.—4.30 P.M., Mr. A. E. Giles: Sterility.
FRIDAY.—4.30 P.M., Mr. H. D. Gillies, C.B.E.: The Rôle of Plastic Surgery in Civil Practice (lantern).
Daily: Special Post-Graduate Course: Demonstrations, Cliniques, Operations.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL POST-GRADUATE LECTURES, Marylebone-road, N.W.
THURSDAY, Feb. 26th.—5 P.M., Mr. L. C. Rivett: Albuminuria in Pregnancy.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
TUESDAY, Feb. 24th.—5 P.M., Dr. S. E. Dore: Alopecia.
THURSDAY.—5 P.M., Dr. Haldin Davis: Leukæmia Cutis. Mycosis Fungoides.

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE (at Whitworth-street West Branch).
FRIDAY, Feb. 27th.—4.30 P.M., Dr. Fletcher Shaw: Contracted Pelvis.

ROYAL INSTITUTION, Albemarle-street, W.
THURSDAY, Feb. 26th.—5.15 P.M., Sir Arthur S. Woodward: First of Two Lectures on Dinosaurs.
FRIDAY.—9 P.M., Sir James Irvine: Sugars from Standpoint of the Organic Chemist.
SATURDAY.—3 P.M., Sir Ernest Rutherford: First of Four Lectures on the Counting of Atoms.

ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH.
TUESDAY, Feb. 24th.—4 P.M., Prof. Price: Renal Insufficiency and Surgical Procedure. Discussion.

THE PEOPLE'S LEAGUE OF HEALTH.
Lectures on What We Should Eat and Why, at the Medical Society of London, 11, Chandos-street, W.
WEDNESDAY, Feb. 25th.—6 P.M., Prof. R. H. A. Plimmer: Diseases Caused by Badly Chosen Diets.

Appointments.

BENN, E. C., M.B., Ch.B. Liverp., has been appointed House Physician at St. Luke's Hospital, Bradford.

St. Thomas's Hospital: PATRICK, C. V., M.B., B.Ch. Cantab., F.R.C.S. Eng., Surgical Registrar; ARCHER, E. C., M.R.C.S., L.R.C.P. Lond., SIMS, T. H., M.B., B.Ch. Cantab., REA, R. H. T., M.B., B.Ch. Cantab., ALEXANDER, R. D., M.B., B.Ch. Cantab., MARKS, D. P., M.R.C.S., L.R.C.P. Lond., BOGGON, R. H., M.R.C.S., L.R.C.P. Lond., ROBINSON, A. B., M.R.C.S., L.R.C.P. Lond., BATTSON, A. A., M.B., B.S. Lond., Casualty Officers and Resident Anæsthetists; COOKE, A. M., M.B., B.Ch. Oxon., TURNEY, H. F., M.B., B.Ch. Oxon., WALKER, E. G. L., M.R.C.S., L.R.C.P. Lond., MCLEAN, W. W., M.R.C.S., L.R.C.P. Lond., HOPE-SIMPSON, J. W., M.B., B.Ch. Cantab., Resident House Physicians; THWAITES, W. G., M.R.C.S., L.R.C.P. Lond., GERVIS, W. H., M.B., B.Ch. Cantab., HUDSON, M. W. P., M.R.C.S., L.R.C.P. Lond., STARKEY, R. S., M.R.C.S., L.R.C.P. Lond., JEFFERY, A. L. P., M.B., B.S. Lond., ALLAN, F. G., M.R.C.S., L.R.C.P. Lond., BARRON, R. McG., M.R.C.S., L.R.C.P. Lond., DARLINGTON, A. F. D., M.R.C.S., L.R.C.P. Lond., REES, E. J., M.R.C.S., L.R.C.P. Lond., HEATH, W. E., M.R.C.S., L.R.C.P. Lond., GORDON, G. D., M.R.C.S., L.R.C.P. Lond., House Surgeons; NEILSON, D. F. A., F.R.C.S. Eng., CAVENAGH, J. B., M.B., B.Ch. Oxon., PILOT, R., M.R.C.S., L.R.C.P. Lond., COOPER, G. K., M.B., B.Ch. Cantab., YATES, H., M.B., B.Ch. Cantab., BARRON, H. T., M.D. Lond., REES, W. E., M.R.C.S., L.R.C.P. Lond., MACDONALD, F. G., M.R.C.S., L.R.C.P. Lond., MARRINER, H. I., F.R.C.S. Edin., PEGG, A. D., M.R.C.S., L.R.C.P. Lond., THOMAS, E. W. P., M.R.C.S., L.R.C.P. Lond., LLOYD WILLIAMS, P., M.R.C.S., L.R.C.P., L.D.S., MILLS, J. D., M.B., B.Ch. Oxon., MARSDEN, J. P., M.R.C.S., L.R.C.P. Lond., TRIM, E. A., M.R.C.S., L.R.C.P. Lond., COOK, L. C., M.R.C.S., L.R.C.P. Lond., RILEY, D., M.R.C.S., L.R.C.P. Lond., DE JERSEY, G. W. S., M.R.C.S., L.R.C.P. Lond., NICHOLSON, H. W., M.R.C.S., L.R.C.P. Lond., TOMPSON, B. E., M.B., B.Ch. Oxon., SHIRES, B., M.B., Ch.B. Edin., RICKMAN, J., M.B., B.Ch. Cantab., MACDONALD, F. G., M.R.C.S., L.R.C.P. Lond., MARCANO, G. R., M.R.C.S., L.R.C.P. Lond., ROBINSON, J. J. R., M.R.C.S., L.R.C.P. Lond., BAUWENS, P., M.R.C.S., L.R.C.P. Lond., SAUNDERS, K. G. W., M.R.C.S., L.R.C.P. Lond., Chief Assistants and Clinical Assistants.

Vacancies.

For further information refer to the advertisement columns.

Bath, Royal United Hospital.—Hon. Anæsth.
Brighton, New Sussex Hospital.—H.S. £50.
Bristol General Hospital.—House Appts. All at rate of £80.
Bristol Royal Infirmary.—Obstet. and Cas. H.S.'s. Each £100. H.P.'s and H.S.'s. Each £80. Also Dent. H.S. £116.
British Hospital for Mental Disorders, &c., 72, Camden-road, N.W.—Hon. Phys.
Bury and District Joint Hospital Board.—Res. Asst. Med. Supt. £400.
Bury Infirmary.—Jun. H.S. £150.
Cairo Egyptian Government, Dept. of Public Health.—Health Expert and Director of Public Health Labs. Each L.E. 1450. Also First Bacteriologist in Pub. Health Labs. L.E. 900.
Cambridge, Addenbrooke's Hospital.—H.S. at rate of £130.
Cardiff, Welsh National School of Medicine.—Asst. Lecturer in Dept. of Phys. £400.
Croydon General Hospital.—Jun. H.S. £150.
Ealing Borough.—Asst. M.O.H. £600.
Hampstead, New End Hospital.—Sen. and Jun. Res. Asst. M.O.'s at rate of £250 and £150 respectively.
Hospital for Sick Children, Great Ormond-street, W.C.—Surg. Reg. £300.
Hospital for Women, Soho-square, W.—Res. M.O. £100.
Leicester Royal Infirmary.—Two Surg. Dressers. 10s. 6d. per week.
London Temperance Hospital, Hampstead-road, N.W.—Dermatologist.
Manchester, Ancoats Hospital.—Res. M.O. and Pathological Reg. at rate of £175 and £100 respectively.
Manchester, Christie Hospital.—Cancer Research Worker. £500.
Manchester City.—Asst. Tub. O. £620 19s. 9d.
Manchester Royal Infirmary.—R.M.O. and Asst. M.O. at rate of £200 and £100 respectively.
Manchester, Royal Manchester Children's Hospital.—Asst. M.O. at rate of £150. Also Res. Surg. O. at rate of £80.
Manchester, Salford Royal Hospital.—H.S. and Cas. H.S. Each at rate of £150.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Asst. Ophth. S.
Newcastle-upon-Tyne, Hospital for Sick Children.—Sen. and Jun. R.M.O.'s at rate of £120 and £100 respectively.
Newcastle-upon-Tyne, Princess Mary Maternity Hospital, Jubilee-road, City-road.—Asst. Res. M.O. at rate of £40.
Newport Education Committee.—Asst. Sch. M.O., &c. £600.
Nottingham General Hospital.—Pathologist. £350 and private fees allowed.
Portsmouth Royal Hospital.—Sen. H.S. at rate of £200.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Two Asst. Res. M.O.'s. Also Sen. Res. M.O. At rate of £80 and £100 respectively.
Royal Chest Hospital, City-road, E.C.—Phys. Also Hon. Radiologist.
Royal National Orthopædic Hospital.—H.S. at rate of £150.
Royal Northern Hospital, Holloway, N.—Asst. Radiologist. £150.
St. Stephen's Hospital, 369, Fulham-road, S.W.—Third Asst. M.O. £300.
Salford Union Infirmary, Hope, Pendleton, near Manchester.—Asst. Res. M.O. at rate £275.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—S. to In-patients and S. to Out-patients.
Sheffield, Jessop Hospital for Women.—Gynæcol. and Mat. Dept., Hon. Gen. P.
Southampton County Borough.—Asst. M.O.H. £600.
Stoke-on-Trent, North Staffordshire Infirmary.—H.P. £150.
University College Hospital, Gower-street, W.C.—Obstet. Phys.
Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O. £100.
Western Ophthalmic Hospital, Marylebone, N.W.—Sen. and Jun. H.S.'s at rate of £150 and £100 respectively. Also Hon. Dental S.
Willesden General Hospital, Harlesden-road, N.W.—Hon. Radiologist.
Yorkshire Orthopædic Hospital, Kirbymoorside.—Res. Orthop. S. £500.

Births, Marriages, and Deaths.

BIRTHS.

SPARROW.—On Feb. 8th, at Wayside, Watford, the wife of E. C. Sparrow, M.B., B.Ch., of a son.
STARKIE.—On Feb. 14th, at St. George's-road, S.W., the wife of Dr. Richard P. Starkie, of a son.
STEPHENS.—On Feb. 8th, at Terrace-houses, Richmond, Surrey, Celia Mary Colquhoun Macneil, M.B., Ch.B., the wife of Cromwell A. Stephens, of a daughter.

MARRIAGES.

MACWATT—SKETCHLEY.—On Feb. 14th, at Holy Trinity Church, Exmouth, John Macwatt, M.B., Morelands, Duns, Berwickshire, to Dorothy Gertrude Powys, younger daughter of the Rev. and Mrs. E. Powys Sketchley, of Exmouth.

DEATHS.

DUGON.—On Feb. 12th, at the School of Tropical Medicine, Endsleigh-gardens, N.W., Thomas Henderson Dugon, M.R.C.S., L.R.C.P., Assistant Director of Medical Services, Nigeria.
JONES.—On Feb. 16th, at Hyde Park-gate, passed away peacefully in his sleep, Dr. Evan Jones, J.P., late of Aberdare, aged 88.
KLEIN.—On Feb. 9th, at Wilbury-villas, Hove, Prof. E. E. Klein, M.D., F.R.S., formerly of Bart.'s, aged 80.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. II., 1924.

THE Index and Title-page to Vol. II., 1924, which was completed with the issue of Dec. 27th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

Notes, Comments, and Abstracts.

THE TRAINING OF HEALTH VISITORS.

A TRANSFERENCE of the authority for the payment of exchequer grants in aid of the training of health visitors from the Board of Education to the Ministry of Health takes place on April 1st, and a Memorandum (101/M.C.W.) issued from the Ministry explains certain changes which will be made in the regulations. It has been decided to approve for the payment of a grant of £15 a whole-time course of training in public health work lasting for a minimum period of six months, provided the student is a trained nurse who has either obtained, or declared her intention of obtaining, the certificate of the Central Midwives Board.

Students who are not trained nurses must attend courses of training of two years' duration at recognised institutions, and a grant of £20 each year will be payable in respect of students who have obtained, or intend to obtain, not less than six months' training in a hospital, and also the certificate of the Central Midwives Board.

Students who receive grants will be required to enter for an oral and written examination conducted by a body approved for this purpose; successful candidates will be given a health visitor's certificate. The course must include theoretical instruction in: (1) Elementary physiology and the structure of the body; (2) personal and domestic hygiene, general hygiene and sanitation; (3) infectious and communicable diseases, including tuberculosis and venereal diseases; (4) maternity, infant and child welfare; (5) school medical service; (6) sanitary law and government, elementary economics, and social problems; (7) the principal legal enactments and regulations connected with the above-mentioned subjects. The corresponding practical instruction must be conducted, so far as practicable, in coöperation with the Public Health Department of the local authority for the area in which the course is given.

This examination will also be open to women who have given satisfactory service as whole-time health visitors for a period of five years without any special course of instruction. After April 1st, 1928, the appointment of a woman for the first time as a whole-time officer of a local authority with health visiting duties will not be approved unless she has obtained a health visitor's certificate.

In a letter (Circular 557) dated Feb. 9th, addressed to local authorities carrying out maternity and child welfare schemes, the Minister calls attention to these regulations and also to the desirability of providing occasional "refresher" courses for those who are already engaged in health visiting. He is prepared to approve the payment by local authorities of the reasonable expenses of their health visitors (including fees, maintenance, and travelling expenses) in attending whole-time courses lasting from two to four weeks and designed with a view to extending both their practical and theoretical knowledge. Reasonable expenditure incurred in respect of short part-time courses will also be eligible for grant. It is pointed out that, since new entrants to the profession of health visiting will be required to devote 3½ or 4 years to their training for this work, the salaries offered should be sufficient to attract and retain efficient qualified women.

INTOLERANCE TO A DENTURE.

To the Editor of THE LANCET.

SIR,—The letter from "Medico" concerning his denture which appears in your issue of Jan. 10th, has been brought to my notice. I would advise him to take a small pellet of wool in a pair of ordinary dressing forceps and gently rub it against every spot on his palate which the denture covers. He may find one which is hypersensitive and induces retching when touched. If so, the denture should be so constructed as not to touch the spot or its immediate neighbourhood. I have had such cases. The remedy is simple.

I am, Sir, yours faithfully,

Devonshire-place, W., Feb. 10th. PERCY EDGELOW.

THE CRIPPLES' JOURNAL.

THE third number of the interesting quarterly entitled the *Cripples' Journal* fulfils the promise of the previous issues. One of the chief objects of the publication is to arouse and keep awake a sense of the duty of the public to provide adequately for the cure and care of all the cripples in this country. We agree with most of the views set out in the editorial note on "Converting the Public" with which this issue opens, but we cannot subscribe to the statement that "the ancients knew considerably more about massage, cleanliness, exercise and sunlight than we do." The Rev. Ratcliffe Barnett and Mr. W. A. Cochrane, of Edinburgh, contribute an informing article on the Cripple Child in Scotland. We deprecate the use of the substantive "Cripple" as an adjective throughout this and other articles; crippled is the correct epithet and the substitution of "cripple" is likely to cause a sensitive reader to have what these writers would presumably call a "trouble" mind. Mr. Archibald Irwin, of Belfast, writes an article on the Crippled Children of Ireland, which deals exclusively with conditions in the north of Ireland. Mr. Rocyn Jones's first instalment of An Historical Review of Orthopædic Surgery promises well for the interest of the second part in the next number. Titania's Palace is described by Sir Neville Wilkinson. Miss A. G. Hunt continues her humorous history of Boschurch and the secretary of the Royal National Orthopædic Hospital gives an account of the history of that institution with interesting photographs of its country branch at Brockley Hill. Leasowe Hospital for Children is described by its senior medical officer and the Codivilla Institute by Mrs. Hey-Groves. The number ends with a useful report of the Central Committee for the Care of Cripples, giving the results of inquiries made in 40 counties as to the provision that is or soon will be available in them. With few exceptions the counties and provincial cities seem to be awaking to their responsibilities in this matter.

A WIRELESS MAGAZINE.

WIRELESS entertainments are being increasingly used as a means of modifying the monotony of convalescence, and, in some cases, as aids to medical treatment, consequently among our hospital populations there are many who take an interest in wireless publications. From Messrs. Iliffe and Sons, Ltd., Dorset House, Tudor-street, Loodon, E.C., we have received a copy of the *Wireless World and Radio Review*, described as a paper for every wireless amateur. This publication, which was established over 12 years ago, has now been taken over by Messrs. Iliffe and Sons and has been issued in an enlarged and more attractive form. In addition to articles of a practical nature for the beginner and the advanced amateur the present issue (Feb. 11th), beginning a new volume, contains a talk by Dr. J. A. Fleming, F.R.S., the inventor of the wireless valve, on the training of the radio engineer.

AN APPEAL FOR BLIND DEFECTIVES.

AT the present time no provision exists for the indigent blind who come under the category of defectives. To remedy this state of things the Ministry of Health specially asked the Braille and "Servers of the Blind" League, of which Her Highness Princess Marie Louise is Patroness and Dame Ellen Terry is President, to help in the matter, and the first "Ellen Terry" National Home in Reigate for blind defective children up to the age of 10 years is almost ready for occupation. A second home for older children is in contemplation. In order that the work may be successfully and quickly accomplished a "Daffodil Day" is being organised throughout the Metropolitan area next Saturday (Feb. 28th), and an appeal is being made for helpers, for the loar of motor-cars, and for donations. Offers of assistance should be addressed to Mr. Clifford Newton, the organising secretary, 3, Upper Woburn Place, London, W.C. 1.

PREVENTIVE MEDICINE AND BUSINESS PROSPERITY.

RECOGNISING the importance of good health to its business, the Metropolitan Life Insurance Company has long been a generous supporter of public health work in Canada and the United States. Its latest benevolent act is the giving of 15,000 dollars to the Canadian Social Hygiene Council for the extension of its child welfare and educational activities. This Council, of which Dr. Gordon Bates is the general secretary and founder in Canada, will now be able to extend its fight against venereal diseases to the rural as well as the urban communities in Canada and to put an expert in charge of the educational policy of the Council who will coöperate with a voluntary advisory committee of physiologists, psychologists, biologists, hygienists, and educationists, to work out an educational scheme for the young which will be national in scope and acceptable in all parts of the Dominion. Two appointments have been already made. Mr. A. D. Hardie, an English headmaster of wide experience, will take charge of some of the work of the educational department of the Council, and Dr. L. A. Pequegnat will become organiser for the eastern provinces.

ERRATUM.—In THE LANCET of Feb. 7th, p. 318, we announced that Glasgow University students in a carnival on Jan. 17th in aid of local infirmaries and charities collected over £700. A Glasgow correspondent points out that the figure should be £7000, not £700, and adds the amusing comment that the lesser sum could not possibly have been reported to us by any citizen who fell into the persuasive hands of the student "highwaymen" on that day. Such was the energy of the collectors' methods that even the very large total of £7000 need not have surprised us.